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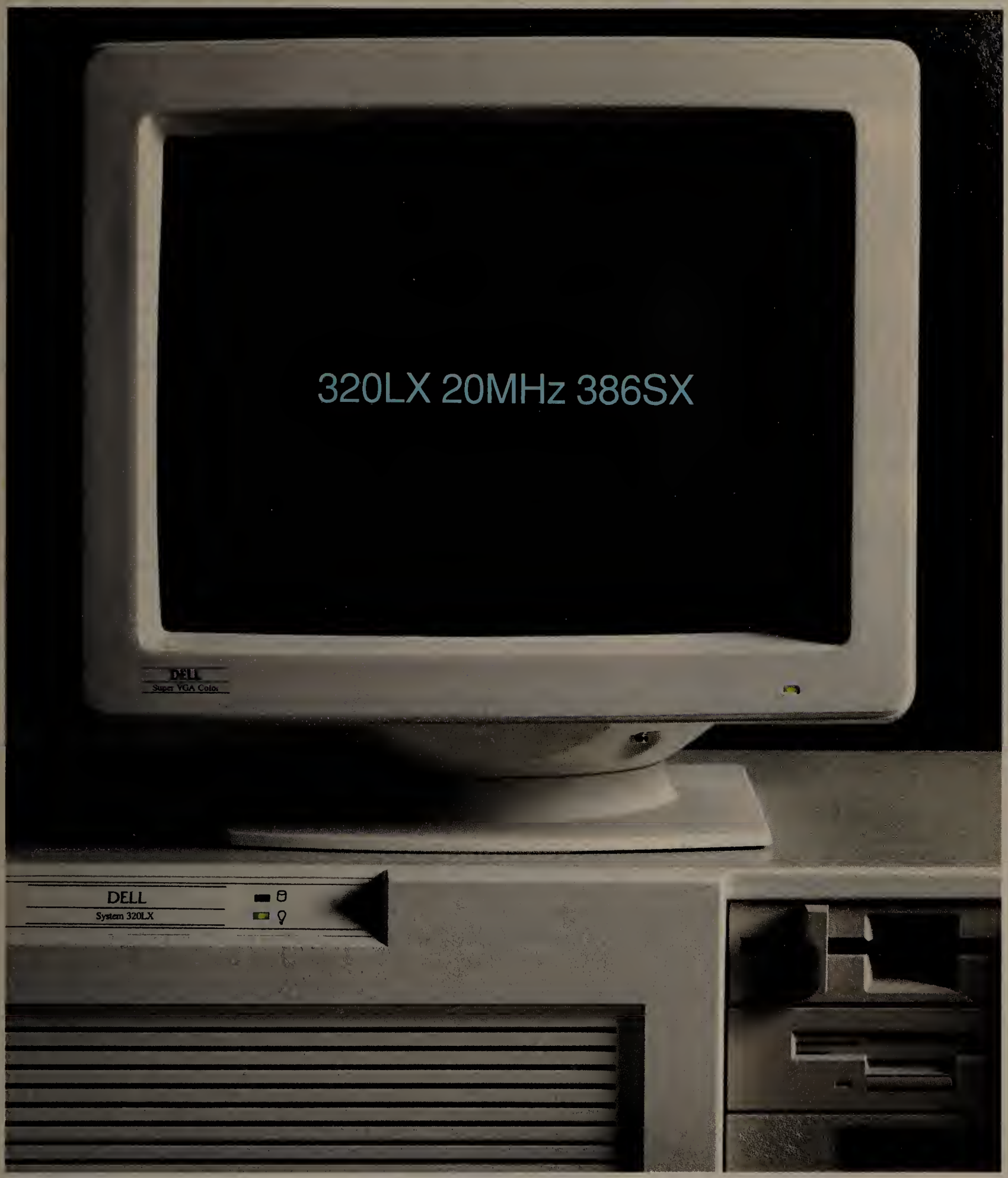

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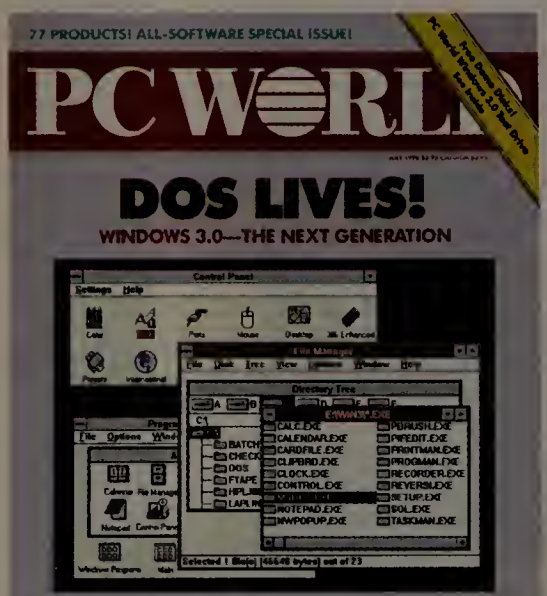

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(MOST PC USERS WANT TO TORTURE THE INVENTOR OF DOS.)

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Do you get royalties from all those How to Use DOS books?

WHY BACKSLASHES?

Why, after six revisions, hasn't DOS been simplified?

Do all your sentences start with C:?

Did it ever occur to you that normal people might use DOS?

Was your father a dentist, or do you...?

How many times have you seen the words Bad Command?

Do your entire vocabulary limited to words of eight letters or less?

How much money do you think Corporate America has wasted on DOS training?

DID DOS ACTUALLY MAKE SENSE TO YOU, OR DID YOU JUST RUN OUT OF TIME?

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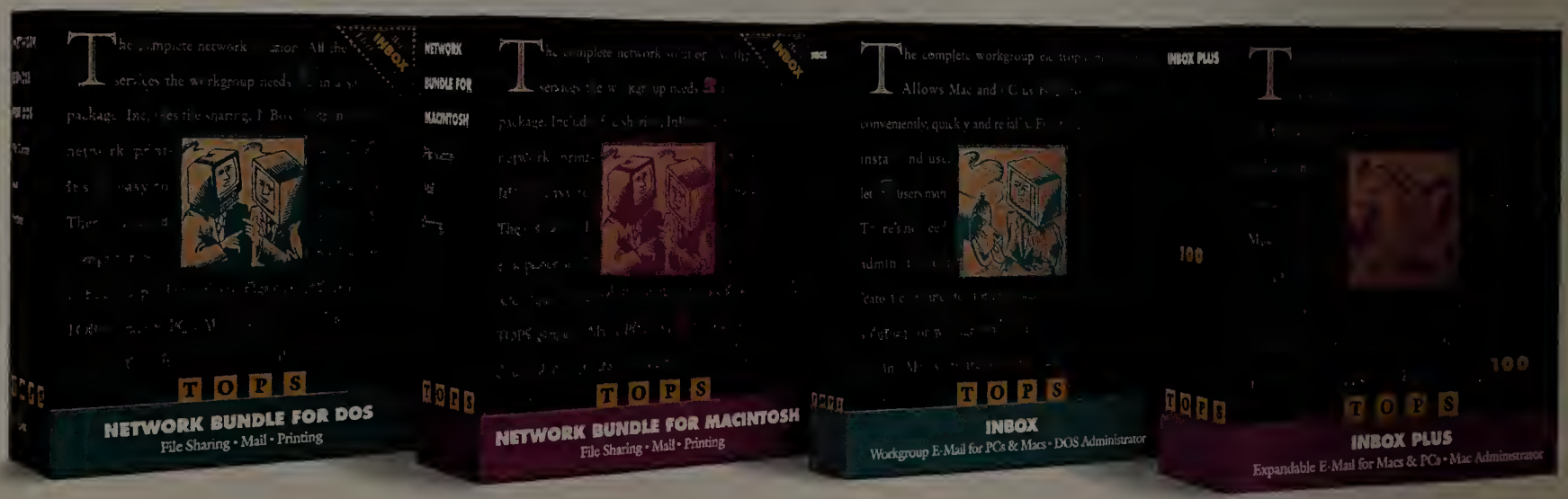

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Michael Goodwin, Lincoln Spector, Robert Lauriston, and Eric Brown bring a personal touch to our All-Software Special Issue.

ROBERT CARDIN

Disaster Relief

Every hard disk is a disaster just waiting to happen. No, not waiting—lurking in ambush, ready to pounce when you can least afford downtime. Lightning strikes, a finger slips, or magnetic charges simply choose to rearrange themselves. Whatever the cause, the effect is distressingly predictable: Files vanish, systems won't boot, hours of work go down the drain.

Fortunately, there are tools for coping with data catastrophes—and this year's All-Software Special Issue focuses on some of the best utilities you can buy. *PC World* editors wrote four of the five reviews, so we felt it only fair that they share their hard disk horror stories.

Associate Editor Michael Goodwin ("Disk Trouble? No, Thanks!") first experienced the agony of inadvertent deletion years ago. "It had taken me months to put together a giant data base cataloging all my jazz and blues records," he recalls. "I wrote a clever batch file to maintain it, but a tiny error in syntax caused it to erase the entire file instead! I had no backup, and unerase utilities hadn't been invented." Goodwin learned his lesson. "After last year's San Francisco earthquake, I turned on my PC and got the 'General Disk Failure' message. This time, though, I had a backup."

Experienced PC users take their tried-and-true undelete program for granted. But most of us bought our favorite utility library in the first place out of desperation. For Associate Editor Robert Lauriston, who put *Mace, Norton,* and *PC Tools Deluxe* through their paces for "Hard Disk Health Insurance," that day came in early 1985. "I was using a DOS-based PC for the first time, as part of the defense team in a complicated civil suit, and found out the hard way what 'DEL *.*' does. Shortly thereafter I had my first acquaintance with *The Norton Utilities.*"

Assistant Editor Lincoln Spector ("Making DOS Manageable") once worked behind the scenes at a national software distributor, where he learned there's no such thing as a perfect backup. "A vendor gave me an early release of a backup program," he recollects. "I liked it and ended up using it, and over the years I forgot that it was a beta version and not the final release. Then one day I had to repartition my hard disk using FDISK. Naturally, I backed up first—but when it came time to restore, I discovered I no longer had a copy of the backup program. Even the software developer didn't have a version that would read my backup files! It took *Mace Utilities* to recover the contents of the hard disk."

Sometimes, though, a disaster is just hard disk housekeeping in disguise. That's what Senior Associate Editor Eric Brown ("Playing for Time: Five Personal Schedulers") discovered one day. "I was at the DOS prompt," he reports, "in the directory where I store word processing documents, and for some reason I typed 'DEL *.DOC.' I was going to turn to a restore utility, but then I realized that every file worth saving was already on a floppy disk, and suddenly I had an extra megabyte of free disk space! It was a liberating feeling. I would *never* have erased all those files consciously."

We suggest that you make backups religiously, optimize your hard disk often, and keep a collection of data-recovery utilities. After all, accidents happen—it's just a matter of time. The next time it happens to you, take our word for it: We know just how you feel.

Ed Bott

Ed Bott
Managing Editor

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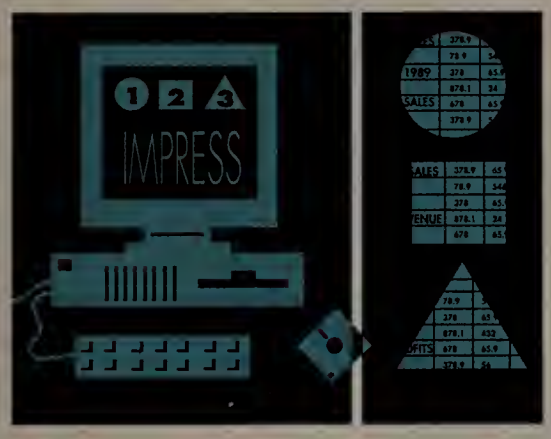
Mike Hogan

1-2-3 3.1 DEBUTS

Upgrade Adds Impress Publishing Technology; Windows Version in the Works



Lotus gives two main reasons why *1-2-3 2.2* outsells the more powerful release 3 four to one: Release 3 lacks spreadsheet publishing features like those in *2.2's Allways* add-in, and customers worry about hardware requirements and compatibility issues. Lotus is addressing both concerns in a release 3 upgrade scheduled to ship in the third quarter.

The $595 *1-2-3* version 3.1 incorporates PC Publishing's *Impress* technology, adding a slick, full-fledged graphical environment to release 3's 3-D worksheets. Users get mouse-driven manipulation of fonts, colors, graphs, and other elements and can perform all spreadsheet operations in this what-you-see-is-what-you-get mode. Version 3.1 also incorporates virtual memory support so that bigger worksheets can be loaded on 286 or better machines with as little as 1MB of memory. Unlike release 3, version 3.1 works happily within *Windows 3.0* because it supports that program's memory architecture.

Lotus disclosed plans for a true *Windows* version, but the company revealed no further details. In all probability *Impress* will replace *Allways* in the *2.x* line, "but we don't have a clamor for a new version of *2.2*—and it's a significant period of time away," says Frank Ingari, vice president for PC spreadsheets.

Analysts applaud *3.1* but doubt it will dramatically boost sales. Some question why Lotus chose to build a fully graphical product using *Impress*'s nonstandard interface. "This is positive, but what you'd really like to see is a *Windows* product," remarks Rick Sherlund of Goldman Sachs & Co.

IBM BRINGING IT HOME?

Home Computer Expected by Summer, but Analysts Fear Another PCjr Debacle

Seeking to broaden its customer base far beyond business users, IBM is preparing its first major move into the home since the PCjr debacle in the mid-1980s. Although it refuses to comment, IBM has quietly been showing prototypes of a modular PC to resellers and software developers. The 286-based system reportedly will have 1MB of RAM, VGA, a mouse, a 3½-inch floppy, a 30MB drive, and audio capabilities with a modem and CD ROM player as options. Analysts predict the PC will be extremely easy to use and will bundle *Microsoft Works*, a DOS shell, and a starter kit for the Prodigy online service. Users will expand the system by adding external boxes rather than boards.

The $1000 base machine is expected to be sold by department stores rather than dealers. Although alarmed, dealers question whether they could turn a profit on such a product—the market opportunity is difficult to assess. While mass merchants sell more than a million PCs each year, the PCs primarily handle work-related tasks. That isn't IBM's target, says IBM vice president James Cannavino, who adds that "people who've never seen computers outside of a video arcade make up most of our potential market."

While some analysts see aggressive pricing and the IBM name helping to define a new market, others raise the specter of the PCjr: "Prodigy is hardly a killer application, and what else do they have?" asks one developer. "You can't tell me there are that many consumers who want to spend money on both a CD ROM encyclopedia and a PC," says Bruce Stephen of International Data Corporation. "I can't see it being a major influence on the industry," concludes Seymour Merrin of Merrin Information Services.

IBM is preparing its first major move into the home since the PCjr debacle.

GORDON STUDER

OS/2 BECOMES WINDOWS PLUS

Windows Applications Will Run Under Future OS/2 Releases

The three-year debate about which graphical environment—*Windows* or OS/2—will be preeminent on the PC is over, and the winner is...*Windows*. In a public nod toward market reality, Microsoft has articulated a new product strategy portraying *Windows* and OS/2 as siblings in an operating system "family" tied together by a Software Migration Kit that will enable developers to easily move *Windows* applications to OS/2 Presentation Manager. Microsoft hopes to add that technology to OS/2 itself, letting *Windows* applications run unmodified under OS/2.

Rather than considering OS/2 a separate operating system, users should "think of it as *Windows* Plus," says Microsoft senior vice president Steve Ballmer. Although this description differs dramatically from Microsoft's public positioning to date, Ballmer reports that it's been internal policy for more than a year. "They've been struggling with how to position *Windows* versus OS/2," adds Paul Grayson, chairman and CEO of Micrografx Corporation, "and were inhibited by their relationship with IBM."

The Software Migration Kit should finally give users a way to migrate from *Windows* to OS/2 "without giving up anything," says Montgomery Securities analyst David Bayer. But developers complain that migrated software would run 10 to 15 percent slower and lack OS/2's most advanced features.

THE PEN APPROACHES

Pen-Based Software Takes a New Slant on Computing

Several start-ups plan releases that would extend the paradigm of pen-based computing found in Grid Systems' GridPad. For example, Go Corporation is working on a non-DOS operating environment whose first implementation is likely to be in a pen-based portable that will be ready before year-end. Slate Corporation plans to ship new types of applications for such machines within the same time frame.

Such firms' vision of pen-based computing extends far beyond the field-automation markets that Grid targets. "Our design goal is much broader than that and broader than hardware," says Go vice president of sales and marketing Dan'l Lewin. Other sources suggest that the new environment is likely to be object oriented at both the code and interface levels, and to be used on far more platforms than hand-held computers. Applications may benefit from having common services such as directory display, saving files, and printing provided by the environment.

This proprietary approach puts Go at odds with Microsoft, which hopes to see *Windows* adopted in the pen-based computing marketplace with DOS in ROM and Intel's flash memory chips (a newly commercialized form of nonvolatile memory) replacing disks. "Microsoft will come at them with everything it has," predicts Dick Schaffer of the *Technologic Letter*. But noting rumors that Go's $15 million in capitalization includes investments from IBM, he gives Go a chance of nay-saying Microsoft's comprehensive view of how computers should be used.

Embracing vertical applications addressed by Grid, both Slate and Go also hope to bring horizontal applications to the estimated 65 percent of workers who avoid keyboards. "We are on the verge of a whole new user paradigm," maintains Slate chairman and CEO Vern Raburn, who says that pens are as revolutionary as Apple's Macintosh. InfoCorp analyst Peter Teige estimates that there will be 22,000 users of pen-based computers by year-end and 3.48 million by 1995.

ASHTON-TATE'S ESBER RESIGNS

His Replacement Suggests New dBASE Shipment Criteria

Since Ashton-Tate president and CEO Ed Esber resigned, new president and chief operating officer William Lyons has outlined a different approach to releasing *dBASE IV*'s long-overdue version 1.1. Noting that it's taken more than 18 months to produce an upgrade to the misbegotten *1.0*, Lyons observes, "I don't think there is such a thing as bug-free software. Traditionally, we have thought of a release date as a goal, but this is a process." His strategy is to follow up version 1.1 with frequent maintenance releases and better technical support.

Esber reported that beta testers were telling him that *1.1* was ready to ship as early as February, but market observers figure that he was forced out because *1.1* still isn't stable and because of the firm's last four losing quarters. Ashton-Tate lost $1 million during the quarter ended March 30 on $57 million in sales—down drastically from the $11.5 million profit on sales of $89.8 million during the same quarter a year before. This trend will continue until version 1.1 ships, says Lyons.

Beta testers contacted disagree vehemently about the soundness of the product, although most say its speed and memory management problems have been solved. Members of the independent dBASE Language Advisory Board reveal that they recommended Ashton-Tate release a less-than-perfect product, fixing minor bugs in maintenance releases. Sources close to the company suggest that *1.1* could ship sometime between mid-July and September, but at this point, probably no one really knows for sure.

Lyons denies rumors that the company is up for sale and that he is negotiating the return of Wayne Ratliff, original developer of the dBASE language, who was once the object of an Ashton-Tate lawsuit. The company is searching for a permanent head of dBASE development; it has been under interim general manager Floyd Bradley since shortly after the January departure of Eric Kim.

GORDON STUDER

DOS 5.0 COMING

Smaller, Faster DOS Version Exploiting 1MB Machines

Microsoft plans a major new release of DOS before year-end that will reestablish a single DOS standard, says division general manager Russ Werner. While refusing to call it DOS 5.0, Werner did promise a number of memory management enhancements that will speed up DOS and reduce its bite of conventional memory to below 20K—compared with 55K for DOS 3.3 and 70K for DOS 4.01.

Werner won't say which techniques will be employed, but Microsoft already has memory drivers that could be used to let portions of the operating system, device drivers, and TSRs be loaded into memory above the DOS 4.0 640K limit on 286 and 386 machines with 1MB of memory. That includes 85 percent of all PCs currently shipping, notes Werner. He says that Microsoft will enhance utilities in the DOS shell, although he won't be specific. He also won't comment on reports that DOS will include a form of task switching that enables users to hot-key between several applications.

Microsoft has "the largest development team we've ever had working on DOS," Werner emphasizes. "Gordon Letwin [lead developer on OS/2] is now the chief architect for DOS." That's a switch; IBM took over lead development of DOS before 4.0, but Werner won't comment on the relationship. Additionally, Microsoft is ending its eight-year hands-off policy and will provide direct technical support for 25 million U.S. DOS users. Those who call 900/896-9000 will receive 1 minute of free support and pay $2 for each minute thereafter. Werner would not say whether Microsoft will sell DOS directly.

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Richard Landry

Why Windows Won't Go Away

It took seven years of improvements to make Windows the successor to DOS. OS/2 might take that long to unseat Windows.

I caught my first glimpse of *Windows 3.0* almost a year and a half ago, in a brief demo Bill Gates gave at Intel's 486 chip announcement. It took a while for the vapor to clear, but now *Windows 3.0* has arrived, and it's looking good. In fact, *Windows* looks so good it seems poised to take the place of DOS as the desktop environment for the 1990s—a role IBM has been desperately trying to claim for OS/2 since 1987. How did *Windows* come out of nowhere to trip up Big Blue?

The answer is simple. It took seven years to get it right, but since its original introduction in 1983, *Windows* has slowly matured into an environment that makes DOS easier and more powerful to use while remaining compatible with most of the hardware and applications used in business today. Meanwhile, OS/2 still lacks some of the basic features needed to make it an attractive upgrade from DOS, even though it requires more powerful hardware than either DOS or *Windows*. *Windows* makes it relatively easy to move from DOS to the world of graphical computing; OS/2 makes the transition hard and expensive.

FRED STIMSON

History Repeats Itself

Windows didn't exactly take the world by storm in 1983. XTs were the hardware standard then, and they lacked the muscle and graphics support that *Windows* required. *Windows* had other problems, too: It demanded a lot of memory but didn't do much to get around DOS's memory limits. It was slow to inspire new software, yet it wasn't great at running older DOS programs. It didn't really exploit the next-generation 286 hardware that arrived shortly after it appeared on the scene. And it supported too few printers and other peripheral devices. *Windows 3.0* is the first version to effectively fill all these gaps.

Already in its third year of revisions, OS/2 appears to be plodding down the same path as *Windows*. OS/2 was designed for 286 systems yet performs well only on 386 or 486 PCs. Its interface is based on *Windows*, but *Windows* software isn't compatible with it. It also doesn't provide a very hospitable environment for older DOS programs. And support for printers and other devices is dismal.

Many of these holes are due to be filled in 1991 with OS/2 version 2.0, but that's no guarantee of instant popularity. Support for DOS programs will improve, but mainly for 386 and 486 users. The operating system will take advantage of 386 chip technology, but only partially. Then there's the matter of *Windows* compatibility. Microsoft says it's building translation code into OS/2 that will let *Windows* programs run under OS/2, though more slowly than under *Windows*. That's a half step toward what should be the long-term goal: enabling developers to create a single program that runs equally well under *Windows* and OS/2. Too bad IBM and Microsoft didn't design this flexibility in from the start.

Learning to Live With Windows

Some developers fear that *Windows 3.0* is going to stunt OS/2's growth, misdirecting users toward a less powerful operating system—*Windows*—even though they're rapidly buying up the hardware needed to run the more powerful OS/2. Those arguments won't hold water with users, however. If IBM and Microsoft want OS/2 to succeed in the future, they have to start now to ensure that migration from *Windows* to OS/2 won't just be possible—it will be relatively painless. The DOS standard lives in *Windows*, and OS/2 must learn to get along with it to survive.

Take a PC World Test Drive

By all indications, *Windows 3.0* will unleash a flood of software to rival the gold rush days of DOS. We know that *PC World* product news and reviews will play an important part in your evaluation of this environment and the programs that take advantage of it. But reading articles and talking to col-

(continues)

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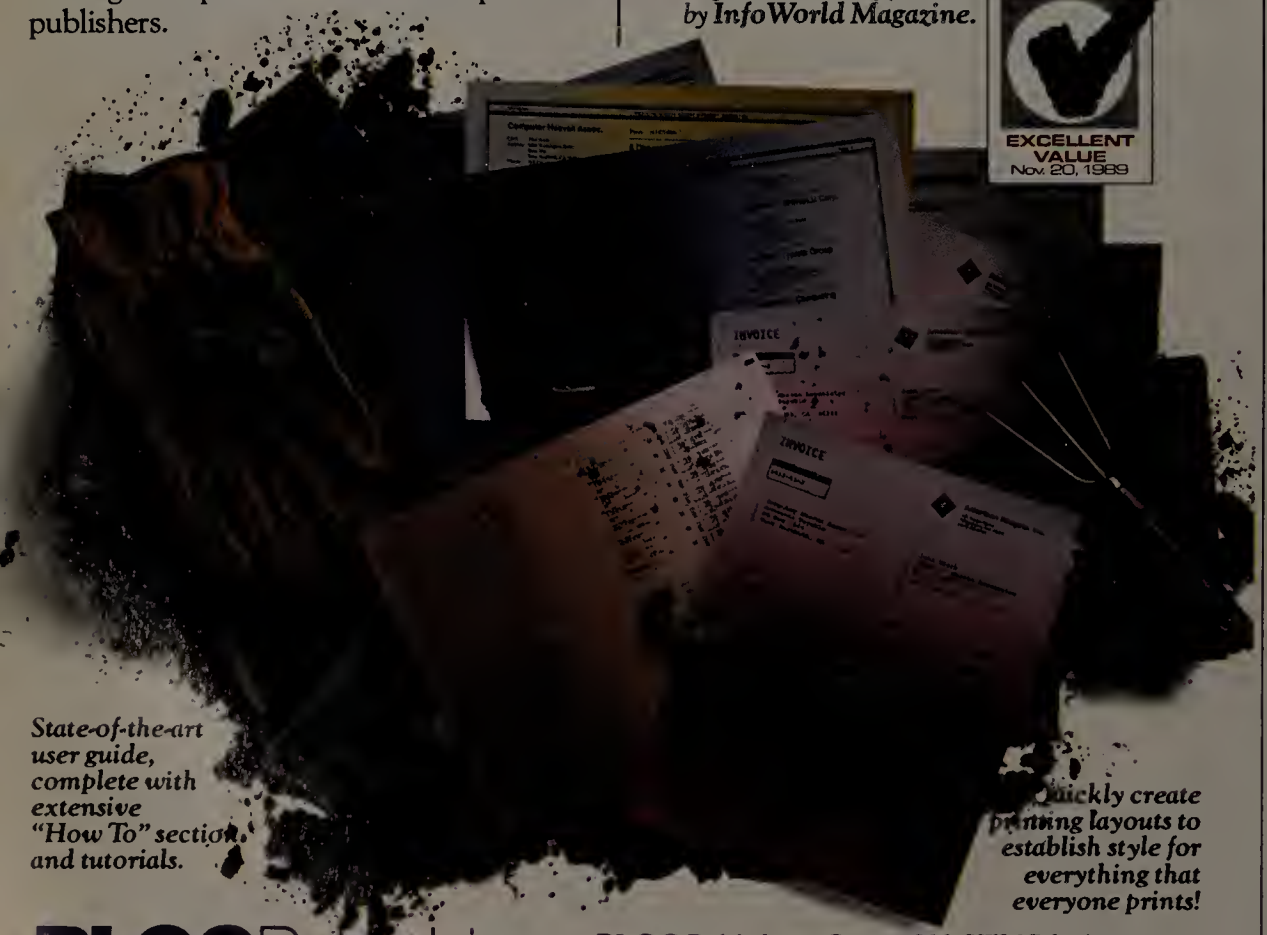
- PostScript fonts for printing full IBM PC character set
- Over 36 page description scripts
- Transparent ruler for fine tuning output
- Tutorial to help you get started quickly
- Full reference for PDS (PageGarden Description Statement) Language
- Font decoder for descriptive listing of all HP LaserJet soft fonts
- 5¼" and 3½" diskettes.

Highest rated utility for 1989 by ***InfoWorld Magazine.***

INFO WORLD
EXCELLENT VALUE
Nov. 20, 1989



State-of-the-art user guide, complete with extensive "How To" section and tutorials.

Quickly create printing layouts to establish style for everything that everyone prints!

BLOCPublishing

BLOC Publishing Corp., 800 SW 37th Avenue
Coral Gables, Florida 33134

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Circle 20 on reader service card

leagues doesn't complete the evaluation process. Before you make the final decision about any new product, you usually want to try it yourself. That's why we've established a new and unique service for *PC World* readers—the *PC World* Test Drive.

When you send in your card for a *PC World* Test Drive, you'll get a true working model of important new software we think you'll want to investigate—not a 3-minute demo, but an actual scaled-down version of a program that gives you a feel for how it really operates. This month's Test Drive includes a full-blown working model of *Windows 3.0*. You'll be able not only to evaluate *Windows'* latest upgrade but to use the Test Drive to try out other *Windows 3.0*–compatible programs too. Plus, you'll get a *Windows 3.0* tutorial written by *PC World*'s editors and created in *Guide 3.0*, a *Windows 3.0*–compatible hypertext authoring package. Watch for more *PC World* Test Drives in the coming months.

As always, I'm interested in your opinions on this or any other subject. Write to me at *PC World*, 501 Second St., San Francisco, CA 94107; fax 415/442-1891; MCI Mail Richard Landry/301-3685.

POWER TIP NO. 113

ATTRIB File Search

In DOS versions 3.3 and later, you can use the file-attribute-changing program, ATTRIB.EXE, as a file-locating utility. The command **attrib** *filename* **/s**, in which *filename* can contain any standard DOS wild cards, will list the path and file names of all matching files in the current directory and its subdirectories. No file attributes will be changed.

Pam Chambers
Irving, Texas

New DisplayWrite 5. Get what you want, without giving up what you have.

New for DOS, DisplayWrite® 5 gives users and buyers alike the power, speed and flexibility they've asked for.

In fact, there are 35 new features. Like split-screen editing that lets you edit and share text between two documents at once. Next, there's Page Preview so you can see text in a WYSIWYG environment to make sure it looks its best before printing. There's even a new command line interface to bypass menus and streamline your work.

DisplayWrite 5 also offers advanced merge options, multi-column formatting support for a variety of fonts and more printer support than ever.

And since the new version is fully compatible with the entire DisplayWrite family, your company's current investment in software and training remains intact. The uncomplicated pulldown menus make it easy for experienced users to employ new features and for new users to learn, right from the start. If anyone has a question, a toll-free support line is there to help.

New DisplayWrite 5: with everything it has, you're bound to get what you want.

Upgrade now. See DisplayWrite 5 in action at your local dealer or call 1 800 IBM-7699, ext. 218 for more information.

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IBM®

BOARDSKI MARKET APPRAISAL OBJECTIVES

I. To determine the market potential
product, the BoardSki.
a) Can the over
concept in spo
b) Is there a partic
purchase this prod
II. To evaluate the market's
a) Will present owners
purchase the BoardSki
b) Is the proposed price of
. Advertising Strategy.
a) In what medium are prospe
reached – television, radio,
b) What is a ballpark figure for
a product rollout expected in or
c) What are the results of user grou
d) Should ads be geared towards pro
initiating a purchase decision?
tribution of product.
) Should the BoardSki only be marketed
sporting goods stores and outlets?
Should an on-site rental chain be establi
beaches, and roller parks and rinks?
What are the pros and cons of retail distribut
cale?

BOARDSKI REPORT # 24

Breakdown of West Coast Market by Age Group: Male

"Television is the best medium for reaching our target market."
"The largest buying potential is males between the ages of 5 and
"A related sportswear line is being suggested for considerat

Age Range	Annual Income	Owns Surfboard	Owns Skateboard	O Snowb
		27%	38%	
5–12	00.00	37%	20%	
12–18	2,500.00	29%	15%	
19–24	20,000.00	11%	3%	
25–34	32,000.00	3%	0%	
35–49	38,000.00			

ANALYSIS:

Due to the proximity of the ocean, the mountains, and a large number of parks, metropolitan Los Angeles represents the ideal market to introduce the BoardSki. The age group with the largest buying potential is males between the ages of 5 and 24.

Surveys indicate that television is the best medium for reaching this market, perhaps by utilizing cable stations with an all-music format. Other possible media buys include FM radio stations and college newspapers.

On a related note, a line of sportswear has been suggested, marketed mainly to the parents of the 5 to 12 age group. Once a theme for the product has been established, a clothing line could be developed around it. To date swimwear, t-shirts, sweatsuits, and winter nylon pullovers have been proposed.

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PROJECT OVERVIEW

CONCEPT

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the meanest surf
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nowboard down

PROBLEM

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to manufacture.

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Altrusport

SCHEDULING

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PRESENTATION HAN

Curtis Surge Protectors Are Superior And Here's The Proof.

New UL 1449 Tells All.

Underwriter's Laboratories, Inc. (UL), developed a New Standard called UL 1449 to provide consumers and dealers with an objective guide to the performance of surge protectors. Surge protectors work by "clamping" a power surge the moment it occurs, thereby controlling the amount of voltage that will pass through to your electronic equipment. The less voltage that gets through after clamping occurs, the more effective the protection.

UL didn't just give Curtis a superior rating because our products look nice. They subjected Curtis Surge Protectors to 26 power surges of 6,000 volts each and then measured the amount of let-through voltage. As the chart below shows, Curtis Surge Protectors not only survived, they passed with flying colors!

Curtis Surge Protectors consistently delivered the highest levels of surge protection. (For detailed brochure, see offer below.)

If you want superior performance plus maximum protection, the results speak for themselves.

UL 1449: Your New Surge Protection Standard. Curtis Surge Protectors: Your Choice.

FREE SURGE FACTS! Get the facts on surge protection. Send for a Free Brochure: "Surge Protection and the New UL 1449 Standard."

Curtis products are available nationally from leading Dealers and Retail chains. For further information call Curtis at 603-532-4123 Ext. 99

Important Information!

UNDERWRITERS LABORATORIES HAS DEVELOPED A TEST TO SHOW THE MAXIMUM VOLTAGE THAT CAN PASS THROUGH A SURGE SUPPRESSOR AFTER CLAMPING HAS OCCURRED.

1449 LISTED

LOWEST VOLTAGE RATING													HIGHEST VOLTAGE RATING
330	400	500	600	800	1000	1200	1500	2000	2500	3000	4000	5000	6000

Curtis Surge Protectors are rated at 400 Volts Peak or less by Underwriters Laboratories Standard 1449 for maximum transient let-through voltage.

WARNING: All surge suppressors are not lightning arrestors and will not provide protection against a direct lightning strike.

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Manufacturing Company, Inc.

CURTIS

30 Fitzgerald Drive, Jaffrey, NH 03452

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LETTERS

Reactions and responses from the PC World community

Looking Beyond Look-and-Feel

What we have witnessed in Lotus's look-and-feel lawsuit [see Richard Landry's April column] brings to mind a bully beating up his small-fry competition in front of a crowd that simply stands and watches. It's a pity that maneuvers to suppress competition can become credible because the excuses for these actions seem worthy of debate to an uninformed public. Unfortunately, those who sit in judgment have little or no comprehension of how computers and software work. Screen layouts are no more proprietary, really, than the shape of a steering wheel. But by the time Lotus is finished—win or lose—it will have drained an innovative competitor's resources, and a complacent public will be the biggest loser.

Robert Soulsby
President
Datascan, Inc.
Boston, Massachusetts

Robert Soulsby is former general manager of Mosaic Software, one of the respondents in Lotus's look-and-feel lawsuit. —Ed.

ANTHONY RUSSO

Higher Standards?

Right on, Mr. Landry! Why would anyone want to copy *1-2-3?* I strongly recommend that no one in our organization buy *1-2-3* anymore. The standard is *Microsoft Excel,* which can read the *1-2-3* files produced by our dinosaurs. We're also boycotting Ashton-Tate. *dBASE IV* files are incompatible with our *dBASE III Plus* standard, and the cost of the upgrade is enormous. We're buying *Foxbase+.*

Gail R. Puryear
Toppenish, Washington

TIM CARROLL

Future Power Today

There are sound economic and practical reasons to move beyond 8086 and 8088 processors. The 286 is fast, has a 16-bit bus, and is adequate for home and small-business use. Anyone who can afford an XT can buy an AT instead. Or you can save up another week's wages to buy a 386SX, which is truly the base system for the future. Owning a 386 means you'll be able to relax and take advantage of software developments well into the nineties. With the assistance of simulated multitasking environments such as *Windows* and *Desqview* or more complex operating systems like UNIX and OS/2, you'll begin to realize the true potential of desktop computing.

Bill Copenhaven
Richmond, California

His Vote's in the Mail

As PC specialist for a small shop (40 PCs), I dealt with CompuAdd [a mail-order firm] for more than a year. After running into persistent problems on two machines, I decided to switch to a local dealer who had always served us well in matters concerning printers and the like. It was the worst mistake I'd made in a long time. I purchased a defective system that failed four times in a seven-month period, costing me about two months' use. Though I'd had problems with CompuAdd, the people there were always polite, and when they saw there was a problem with the equipment, they immediately replaced the system, no questions asked. People ask me for recommendations and usually buy what I suggest. Lately I've been recommending reputable mail-order firms over local vendors, without exception and with excellent results.

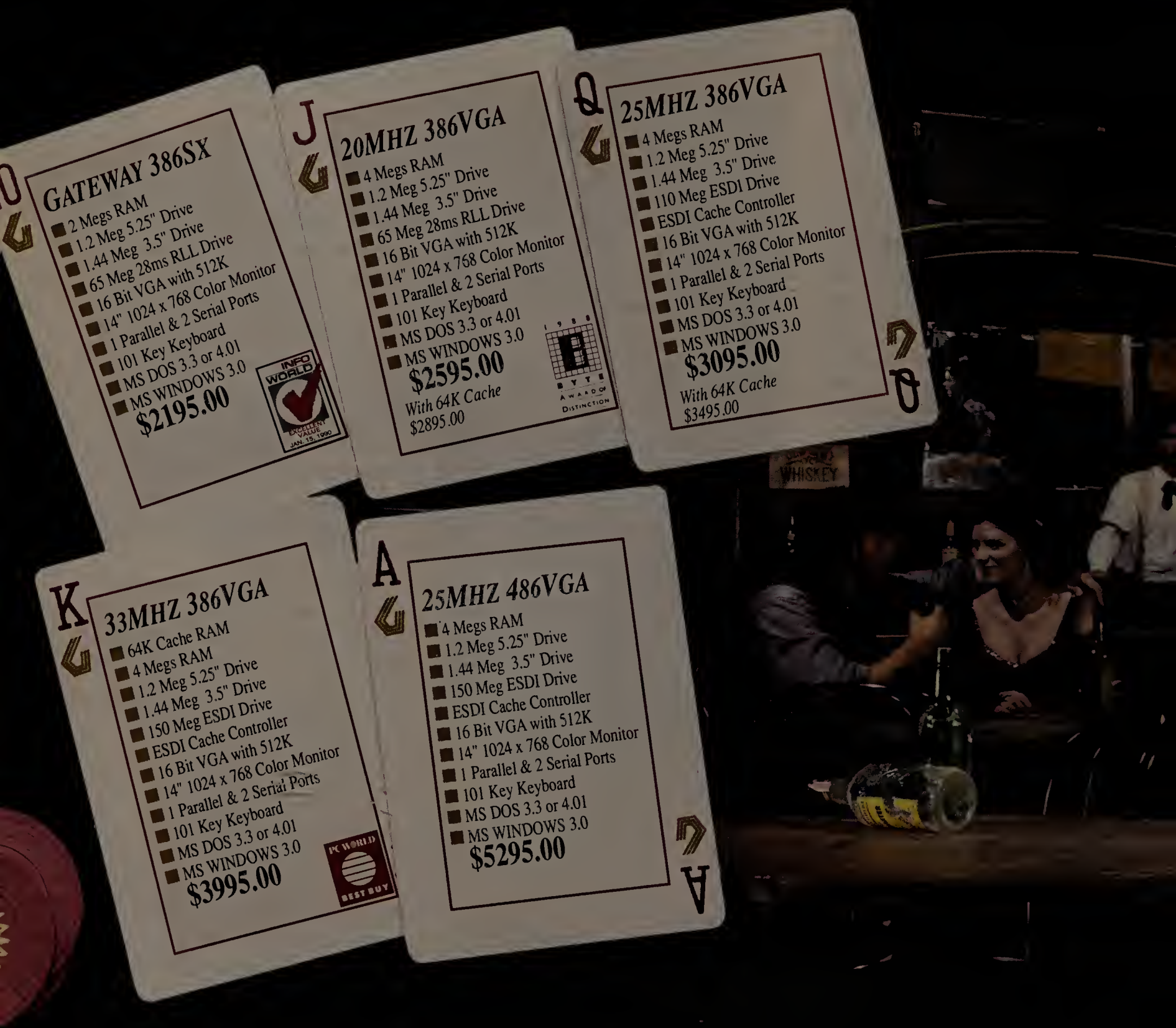
William J. Upper
North Amity, Maine

Limiting FCC Interference

There's another side to the issues you discussed in your March *Consumer Watch* ["The Limits of Interference"]. I agree that Class B certification tends to indicate more careful engineering, but when was the last time you received interference from any computer? An electric motor on an air conditioner or a legally operating CB radio is more likely to cause interference. The FCC spends time and money enforcing certification regulations but has refused to regulate new energy-efficient RF lighting devices that cause considerable AM interference. Are consumers being served and protected, or are they paying higher prices and seeing fewer inno-

(continues)

IN THE HIGH STAKES GAME IT'S NICE TO KNOW WHEN



Being in the market for a new computer system is like being a spectator at a high stakes poker game. You're trying to pick the winner from the manufacturers gathered 'round the table. They're all betting as if they held five aces. So how do you tell who's bluffin' and who's got the winning hand?

Take a look at Gateway 2000's cards.

Our royal flush consists of five fully-loaded, high-performance machines (plus a 12 MHZ 286 that wouldn't fit in our hand) at better prices than the competition's stripped-down models.

Then compare Gateway 2000's standard features and services: Two diskette drives, a 5.25" 1.2 Meg floppy and a 3.5" 1.44 Meg diskette drive, are standard

Due to the volatility of the DRAM market, all prices subject to change

OF PERSONAL COMPUTERS... YOU HAVE A WINNING HAND!

High capacity/high speed hard disk drives and controllers are standard • Two Megs RAM on 286 and 386SX systems, 4 Megs RAM on 386 and 486 machines are standard • 1024 x 768 VGA Color Monitor is standard • All systems can be custom configured to your specifications • 30-day money-back guarantee • One-year warranty on parts and labor • Toll-free technical support for the life of your machine • Free Federal Express shipment of replacement parts • Bulletin board support • Free on-site service to most locations in the country.

For price, quality and service, Gateway 2000 has an unbeatable combination.

Call Gateway 2000 and you're the winner. No bluffin'!

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vative computers because of the lengthy FCC certification process?

Tom McGrane
Sitka, Alaska

Communications Breakdown?

Thanks for Judy Getts's lucid explanation of MNP modems in your April issue ["Nine MNP Modems for Corporate Communications"]. I'm puzzled, however, by her math. Suppose a file compressed with *PKZIP* takes 25 percent of the space of the original. An MNP-5 modem sends the original file twice as fast; wouldn't a *ZIP* file transmit twice as quickly again? Also, current versions of *PKZIP* and *ARC* can produce self-extracting files that eliminate the need for the recipient to own a copy of the utility.

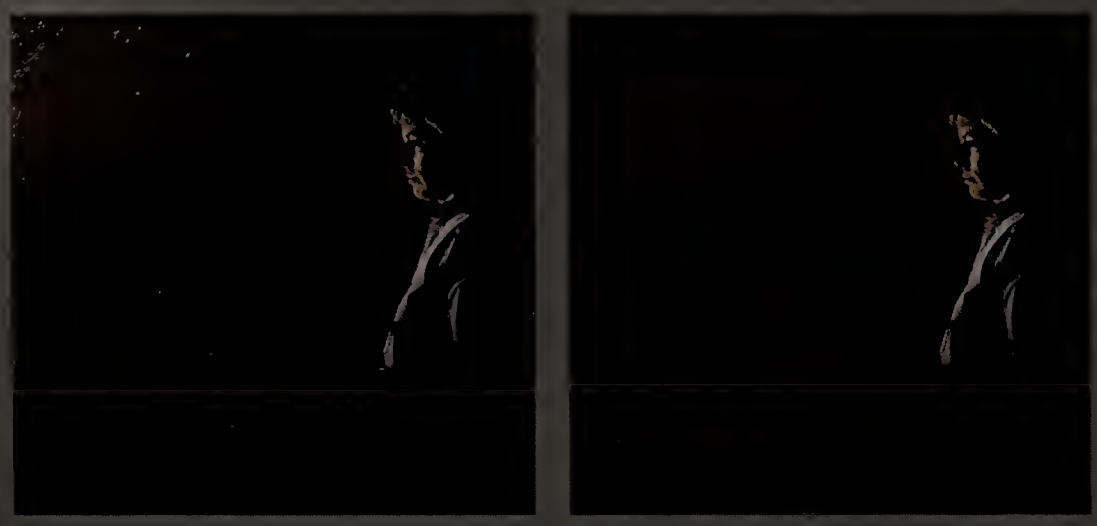
Tony Lima
San Carlos, California

More than half of our 2400-bps customers have already migrated to 9600-bps modems.

Articles like the April effort by Judy Getts reinforce the conclusion that you can't get accurate information on modems, outside of data communications journals. The business world's standard communication speed is no longer 2400 bps. My company distributes communications hardware, and more than half of our 2400-bps customers have already migrated to 9600-bps modems. Ms. Getts is correct in one sense: MNP-5 data compression can cut toll charges in half. Wouldn't it make sense to explain that an MNP-7 product would be even more economical since it provides three-to-one compression?

Valerie Emery
Wichita, Kansas

(continues)



All Video Display Terminals (VDT s) emit electromagnetic radiation that bathes the user through the screen. The figure on the left shows a visualization of electromagnetic radiation from the VDT s, and in red from the screen.The photo on the right shows that the NoRad Shield™ virtually eliminates screen-emitted E-field electromagnetic radiation.

VDT Radiation Is it harmful?

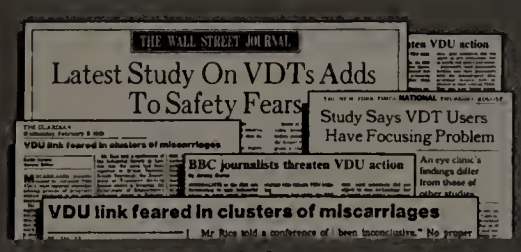
. . .The membranes of cells can be sensitive to even fairly weak externally imposed low frequency electromagnetic fields. Extremely small signal changes can trigger major biochemical responses critical to the functioning of the cell. U.S. CONGRESS, OFFICE OF TECHNOLOGY ASSESSMENT REPORT

Women who used VDTs for more than 20 hours each week in the first trimester of pregnancy suffered almost twice as many miscarriages as women in other types of office work.
The New York Times

Now you don't have to accept the risks. NoRad Corporation has introduced the NoRad Shield which virtually eliminates the through-screen non-ionizing E-field electromagnetic radiation while disposing of glare, reflections, and the static electric field.*

FREE BOOKLET To get the facts, write or call and ask for our free booklet entitled, "VDT Health Hazards."

The NoRad Shield is available for all IBM PC and compatible screens, monitors, and displays.



Evidence mounts which shows a connection between non-ionizing radiation and skin irritation, eye damage, and an increase in miscarriages.

*99.999% E field attenuation from 20kHz to >200MHz. H field >50% above 30kHz.

NoRad

1-800-624-8999 Ext. 498
NoRad Corporation 1549 11th St.
Santa Monica, Ca 90401 213-395-0800
CANADA: CLECTIC PRODUCTS, LTD.
604 624-5168
NoRad Shield is a trademark of the NoRad Corporation.

Circle 180 on reader service card

Other laser printers play with one standard dot size.

HP makes it a

ASTRONOMY IS
LOOKING UP

THE HIRSCH REPORT OF THE SKIES — VOL. 8, NO. 4, FALL 1990

STAR SHORTS

Reported by The Star

Every day billions of dust particles enter into Earth's atmosphere. Now scientists are working to make meteor-burst communication a practical and economical alternative to the use of tele-

(continued on page 2)

You Can't See the Great Wall from the Moon!

Everyone has heard that you can see the Greet Wall of Chine from the Moon. Or from Earth orbit. Or even from Mars. Certainly you cannot see the Great Wall from the Moon. According to an astronaut, it's difficult even seeing continents. You may be able to see the Great Wall from orbit, but, in general, it's difficult even to see familiar objects; the planet's swift mo-

(continued on page 3)

Voyager's Last Picture Show:
When Voyager 2 was launched 12 years ago, who could have imagined these photos at this point in time.

More on planetary explosions inside.

NO BLACK HOLES?

Scientists are still unable to confirm the existence of even a single black hole, despite widespread belief that such things should exist. Tracking down these invisible objects isn't easy, because they can only be studied indirectly by the effects they have on their surroundings. There are several types of pieces that

(continued on page 3)

MIRROR, MIRROR

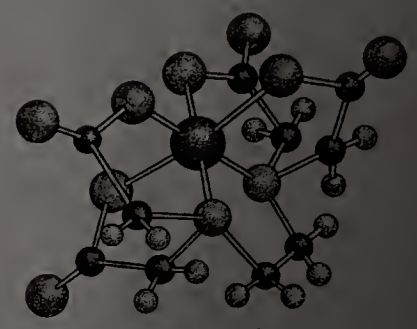
It's a chore, but all reflecting telescopes require cleaning their reflective mirrors. Eventually, the aluminum coating on their mirrors deteriorates and needs replacing. For large instruments, the process requires removing the tele-

(continued on page 5)

CHAIN REACTION

BAGOT'S CHEMICAL LETTER

JUNE 9, 1990
VOLUME FOUR
ISSUE THREE



New Leaps in Metal-Orgenic Chemistry

What's New in Superconductivity?

Antimatter Bottled

Fifty Years Ago

Metal-organic chemistry bridges the gap between organic and inorganic chemistry. It can lead to important new products (for example, poison antidotes). A chelate, such as EDTA above (containing carbon, hydrogen, oxygen and nitrogen atoms) can surround ions of metals and remove them from unwanted places. *(continued next page)*

It was almost exactly three years ago that a ceramic material that superconducts above liquid nitrogen temperature was discovered. Within days of the discovery, electronics, power transmission, and transportation were being redefined in everyone's imagination. Yet superconductivity was not a new phenomenon. The effect was first observed in mercury in 1911, and, since then, more than 6000 elements, alloys, and compounds have been found to superconduct!

(continued next page)

A device tested may give investigators a glimpse of what an antimatter world might look like. The device cools antimatter to a tempera a few degrees above absolute zero and stores it for several days at a time.

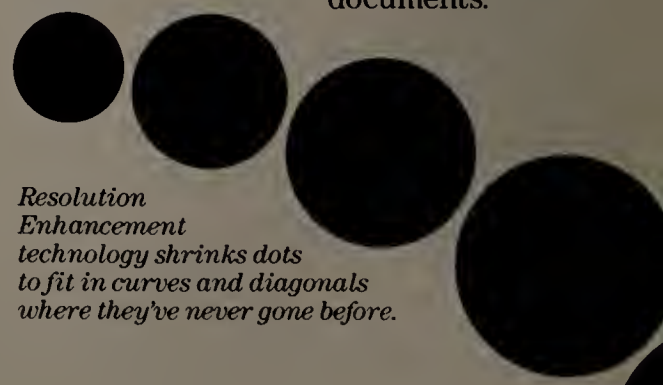
(continued next page

Rumor has it that before WWII, our chemists were experimenting a distilling process to lower the calories of ordinary beer. Aban the research at the onset of world war, researchers then pursu d development of a shelf-stable C ration. Don't believe all rumor

Introducing the new HP LaserJet III printer with Resolution Enhancement technology.

The rules have changed. Now the name of the game is Resolution Enhancement technology. You'll call it the best thing to happen to laser printing since the very first HP LaserJet printer. It gives you clearer resolution. Curves that really curve. And edges that are never jagged.

Instead of a "one-size-fits-all" dot, HP's built-in intelligence varies dot sizes. So they can fill areas where they could never go before. For clearer, more professional-looking documents.



Resolution Enhancement technology shrinks dots to fit in curves and diagonals where they've never gone before.

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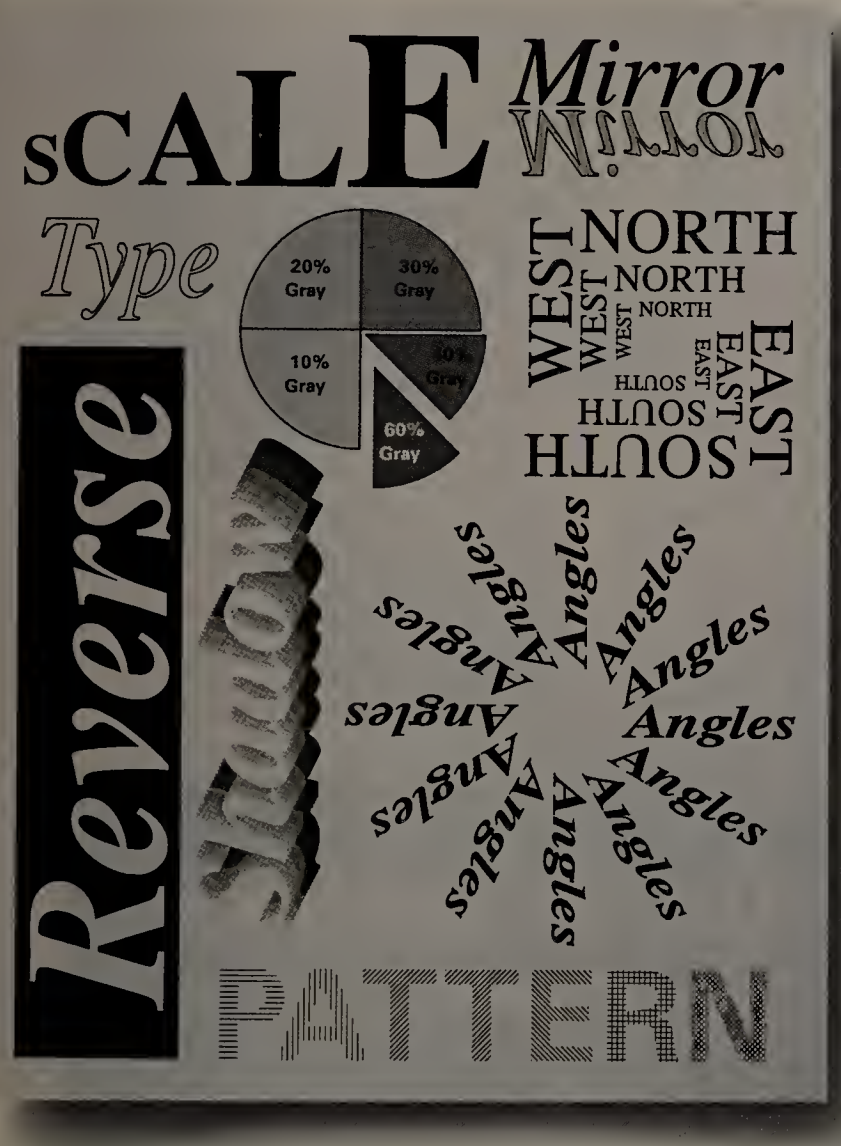
whole new ball game.



But there's more than better print quality. 14 bit-mapped fonts and 8 internal scalable typefaces provide thousands of options. And enhancements to our PCL5 printer language, including our HP-GL/2 graphics language, let you print portrait and landscape on the same page. Reverse and angled type. Spirals. Even shaded text. You can also plug in Adobe PostScript® software.

For all its new features, the $2,395* list price of the HP LaserJet III is a good deal less than the HP LaserJet

Series II printer it replaces. With the same hardware compatibility, wide range of applications, 8 ppm print speed, and software compatibility, including WordPerfect 5.1 and WordStar® 6.0. And the same reliability as the rest of the HP printer family.

So call **1-800-752-0900, Ext. 1007.** Ask for our booklet on Resolution Enhancement technology and where to find your nearest authorized HP dealer. We'll put you in a whole new league.

There is a better way.

HEWLETT PACKARD

*Suggested U.S. list price. WordStar is a U.S. registered trademark of WordStar International Incorporated. Adobe and PostScript are registered trademarks of Adobe Systems, Inc.

Circle 82 on reader service card

Mr. Lima is correct; some archiving utilities can now produce self-extracting files, but compression rates vary widely, depending on file type. While some transmissions may be faster, files must be converted manually at each end, and automatic MNP-5 compression should be disabled for optimum speed. Ms. Emery's statement that 9600-bps modems now represent the business standard is not supported by the facts. The overwhelming majority of modems sold in the United States are 2400 bps; manufacturers and analysts agree that this trend will continue for the next few years at least. And as the article states, the MNP-7 protocol provides three-to-one compression but lacks the popularity of MNP-5. —Judy Getts

Making His Case

I agree with most of John Diebold's comments in your March laptop review, and I believe that the Compaq LTE/286 is amazing in its combination of power and small size. I do have one problem with the assessment of it as a true portable, however. The LTE's formfitting case lacks a space to hold extra batteries or the AC adapter. Size is important, but why must I store extra batteries and other useful items somewhere else? Did the designers at Compaq use this computer with its carrying case?

David Lloyd
Toronto, Ontario, Canada

A Better Bundle?

I found the March *Industry Outlook* piece on systems with bundled software interesting, but you didn't mention the ultimate in bundled hardware-software systems: Tandy's line of desktop and laptop/notebook computers with *DeskMate* in ROM. Considering that you get the most popular application types (word processing, communications, spreadsheet, and so on) and the option to have the applications available when the computer boots, these computers represent an exceptional value.

Michael A. Banks
Milford, Ohio

You Ain't Seen Amiga, Either!

One glaring omission from your March article "Desktop Multimedia: You Ain't Seen Nothing Yet" is Commodore's Amiga, the leader in this rapidly growing field. An Amiga 2500/30 equipped with Commodore's AT or XT bridgeboard for IBM compatibility makes a formidable multitasking, multimedia computer. The Amiga is still the only personal computer sold with a true "out-of-the-box" NTSC-compatible video signal, a feature essential for transferring computer graphics to video.

John Byrne
Baltimore, Maryland

To send correspondence, please see How to Contact PC World, page 4.

One communications software package stands alone in power, ease of use and affordability.

The new standard in communications software.

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DATASTORM TECHNOLOGIES, INC

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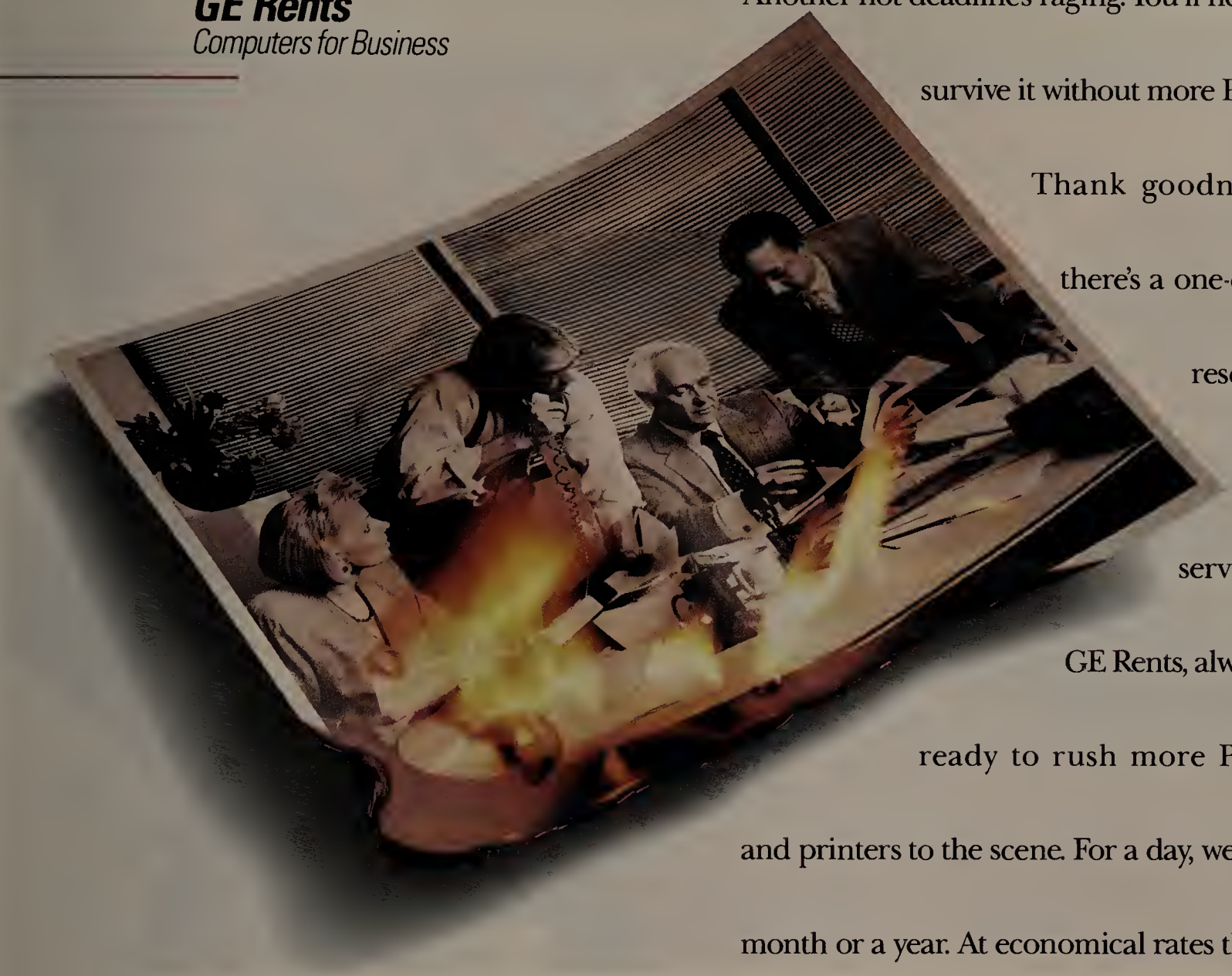
Circle 277 on reader service card

GE Rents
Computers for Business



Fight Office Fires With Computer Rental From GE.

Another hot deadline's raging. You'll never survive it without more PCs. Thank goodness there's a one-call rescue service: GE Rents, always ready to rush more PCs and printers to the scene. For a day, week, month or a year. At economical rates that won't burn your budget. With overnight delivery–even same day in some areas. And renting is so smart, maybe soon you'll be the one setting the deadlines. Feeling the heat? Call GE Rents. The idea that's revolutionizing the way business uses computers.

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Circle 98 on reader service card

AT 4:45 PM, YOU NEED A TEAM EFFORT.

Ever notice, when your back is against the wall, everyone else's is out the door? With our newest release of Presentation Team™, you're not alone anymore.

You can go from idea to visuals. From headache to high-quality handout. From concept to last-minute changes...while the day is still young. You'll get better-looking results—the kind of powerful, persuasive presentations that look like you've spent weeks, not hours.

If creating presentations is only *part* of your job, choose the tool that will make it that much easier. Choose the most complete graphics solution on the market, a real team player. Presentation Team, version 2.0.

Network support now available. Contact your nearest dealer or call the Digital Research team at (800) 443-4200. In Canada, call (416) 360-5316.

Presentation Team™

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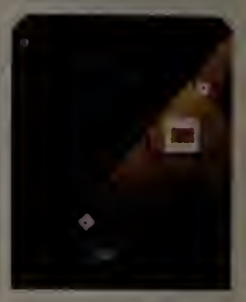

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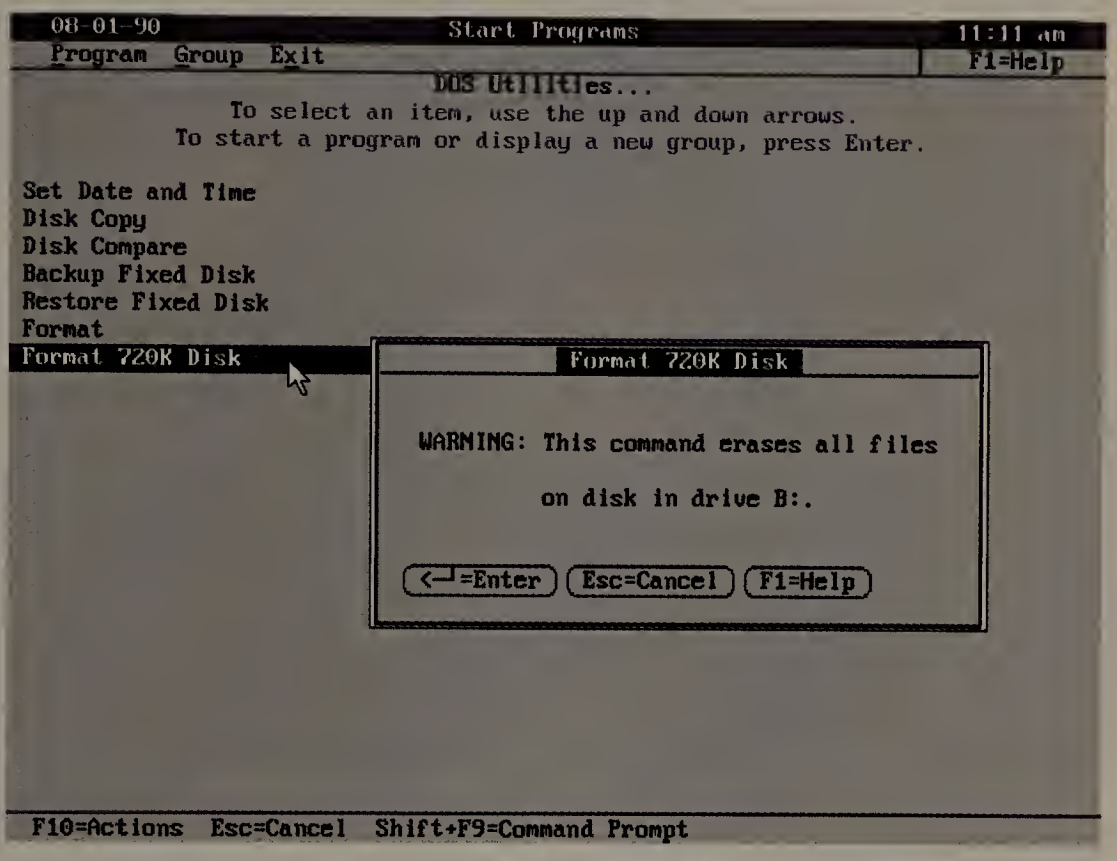
Circle 60 on reader service card

THE HELP SCREEN

PC World offers answers and advice at every level

Format 720K disks in a 1.44MB drive, install DOS-OS/2 Dual Boot, learn about the price of memory, set WordStar's default document drive and directory, page through ASCII files, discover more equation-writing programs, and connect two Novell networks.

Karl Koessel



SCREEN 1: Using DOS 4.x's shell, you can make formatting 720K disks in a 1.44MB drive a simple menu selection that pops up this warning.

720K Format From a 1.44MB Drive

Q. *I've installed a 1.44MB 3½-inch floppy drive B: on my system at home. Although the drive reads and writes both 720K and 1.44MB disks, it always formats disks to 1.44MB. My work machine, unfortunately, can use only 720K floppies. To bring files from home to work, I must first format a 720K disk at work and then remember to bring it home. Life would be much simpler if I could get my 1.44MB drive to format 720K disks. Know how?*

Charles Verschoor
Miami, Florida

ANTHONY RUSSO

A. Under DOS 3.2 and later 3.*x* versions, the command is **format b: /t:80 /n:9**, which indicates a format of 80 tracks, each with 9 sectors. If you put the command in a batch file named 720.BAT and store it in a directory listed in your system's PATH command, you can just enter **720** at the DOS prompt whenever you want to format a 720K disk. To create 720.BAT, type **copy con 720.bat** at the DOS prompt, press **<Enter>**, type **@format b: /t:80 /n:9**, press **<F6><Enter>**, and then copy 720.BAT to an appropriate directory.

For DOS 4.0 or a later version, the command is **format b: /f:720**. If you use the DOS shell, you can create a menu selection to make formatting to 720K a point-and-click affair. From the Main group on the Start Programs screen, select *DOS utilities*. Select *Program* from the action bar and *Add* from Program's drop-down menu. Type **Format 720K Disk** in the Title box. Press **<Tab>** to move to the Commands box, type **format b: /f:720**, and press **<F2>** to save this information. Now 'Format 720K Disk' will appear among the DOS Utilities group's contents.

The DOS 4.0 shell provides optional parameters that you can use within square brackets ([]) in the Commands box to customize a command's dialog box. Instead of having the dialog box prompt for parameters, you can make it display the warning message shown in **SCREEN 1**. Highlight *Format 720K Disk*, press **<F10>**, and select *Program Change*. Press **<Tab><End>** to append the following string to the command in the Commands box: **[/t"Format 720K Disk"/**

(continues)

PC WORLD STEP-BY-STEP GUIDE #1

How to Install DOS-OS/2 Dual Boot

With Dual Boot, both DOS and OS/2 are installed on the same hard drive, enabling you to boot either operating system. This implementation boots the most recently used OS, then lets you choose to boot the other.

DOS uses the FAT (File Allocation Table) file system. OS/2 1.2 can use FAT drives and drives using its new High-Performance File System (HPFS). DOS does not recognize HPFS drives; to install Dual Boot, drive C: must be a FAT drive. This restriction means that if you want a FAT volume larger than 32MB, you'll need DOS 4.0 or a later version; otherwise, you can use DOS 3.2 or (preferably) 3.3.

When you've decided on the number, size(s), and type(s) of hard disk volumes, follow these steps to set up DOS-OS/2 Dual Boot:

BACK UP HARD DISK
Copy FDISK.COM to C:\
Delete all other DOS files and remove the C:\DOS directory
Back up all hard disk volumes

REPARTITION HARD DISK
Issue **c:\fdisk**
Delete DOS partitions and logical drives
Create new DOS partitions and logical drives as desired (if you want an HPFS volume, do not assign all cylinders to DOS)
Ensure drive C: is the active partition
Exit FDISK

REBOOT DOS
Insert copy of original DOS (3.2), Startup (3.3 5¼-inch) or Startup/Operating (3.3 3½-inch) disk; or insert Select Copy disk (from previously installed 4.*x*) or Install disk (4.*x*)
Reboot

INSTALL DOS USING SELECT (4.*x* only)
Continue as directed to use SELECT program to install DOS

INSTALL DOS MANUALLY (3.*x* only)
Answer date and time prompts
Issue **format c: /s**
Change to drive C:
Issue **md c:\dos** and **xcopy a:*.* c:\dos** to create a DOS directory
Copy any other DOS disks to C:\DOS

CONFIGURE DOS FOR DUAL BOOT
Ensure C:\CONFIG.SYS contains:
shell=c:\dos\command.com /p
Ensure AUTOEXEC.BAT contains:
set comspec=c:\dos\command.com
path=c:\dos;c:\os2
copy c:\dos\command.com c:
Reboot to verify DOS's installation

INSTALL OS/2
Insert OS/2 installation disk in drive A:
Reboot

INSTALL OS/2 (continued)
Install OS/2 according to instructions presented (do not install HPFS or you'll wipe out your FAT partition and won't be able to boot DOS)

INSTALL HPFS (optional)
Select *Fixed Disk Utility* from the Utilities group (scroll down to find it) to set up HPFS partition and logical drive
Using *OS/2 System Editor* from the Main group, add these lines to your OS/2 CONFIG.SYS file:
ifs=c:\os2\hpfs.ifs /c:64
run=c:\os2\cache.exe
Reboot
Select *OS/2 Full Screen* from the Main group
Issue **format d: /fs:hpfs**
Exit full-screen mode

CREATE "BOOT DOS" OPTION
Select the *Utilities* group
Select *Program New*
For program title, type **Boot DOS**
For path and file name, type **c:\os2\boot.com**
Type **/dos** as the parameter
Press **<F2>** to create Boot DOS icon

CREATE "BOOT OS/2" OPTION
Select the new icon to boot DOS
If you're using DOS 4.*x*, press **<Esc>** to get to the Main group, and select *Program Add* to enter the menu title **Boot OS/2 1.2** and the command **c:\os2\boot /os2**
If you're using DOS 3.*x*, create a batch file called BOOTOS2.BAT that contains the command **c:\os2\boot/os2**, and move it into a directory listed in your system's PATH command so you can execute BOOTOS2 from any DOS prompt

RESTORE HARD DISK
Restore your DOS files, taking care not to restore AUTOEXEC.BAT or CONFIG.SYS, then delete C:\FDISK.COM

You now have a DOS-OS/2 Dual Boot system that will let you operate the way you're used to, as well as become acquainted with OS/2.

i"WARNING: This command erases all files"/p"on disk in drive B:."/l"0"], then press the **<F2>** key.

The quoted string after the /t, which can be up to 40 characters long, is the dialog box's title. The string following /i, also a maximum of 40 characters, is the instruction line. Up to 20 characters can follow the /p parameter, which usually displays a prompt and a parameter input box. However, by setting /l, the maximum parameter string length, to 0, you prevent the parameter box from being displayed: No parameters can be changed or added, and the parameter box's prompt becomes a second line to the warning message.

The DOS 4.0 shell provides optional parameters that you can use to customize a program's dialog box.

The Price of Memory

Q. *I recently purchased a Compaq 386/20E with 1MB of memory on the motherboard and an additional 1MB on a Compaq memory expansion board. I want to upgrade my system's memory to 6MB, but I'm bewildered by wildly different prices for ostensibly similar RAM chips: A genuine Compaq 4MB module for my memory expansion board costs anywhere from $1370 to $1800, but ads from third-party vendors quote prices ranging from $600 to $800 for the "equivalent" part. Can you explain why those prices are so different?*

Marj Wiener
New York, New York

(continues)

When considering new computing technologies,
remember the importance of compatibility.
Weigh the cost of retraining.
Bear in mind the investment you've made in your
current systems. Don't overlook networking options.
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Then do what

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A. Why does a Compaq system cost more than most clone systems? Much of the extra cost pays for testing, support, and marketing. Genuine Compaq parts are tested before shipping. And buying through your Compaq dealer guarantees that local assistance is available if necessary.

But a small manufacturing company that doesn't have to provide support can slash prices even further by keeping its

(continues)

NETWORK Q&A

Remote Possibilities: Linking Distant Novell Networks

Peter Tait

Q. *I have been given the task of connecting two Novell networks on opposite sides of town. Is it possible to bridge the two networks by attaching an asynchronous communications server (ACS) to our file server, or to bridge them some other way and use one ACS for both sides of town?*

Michael Bowgren
St. Charles, Illinois

A. How you connect the two networks depends on why you want to connect them. If your users simply need to exchange E-mail, a modem-to-modem connection will suffice; contact your E-mail vendor to learn its recommended method for inter-LAN E-mail communications. If the goal is to share the ACS, a 9600- or 19,200-bps connection will do, since the traffic between the user and the ACS consists primarily of keystrokes and screen updates. If users need to transfer files between networks, a faster link would be prudent. Finally, if you expect high-volume inter-LAN traffic, such as queries from one network to data bases on another, or if network traffic is critical to your business, you'll need very high-speed links—from 56 kbps to 1.544 mbps. Of course, the costs associated with both the hardware and the communications line increase markedly for higher-speed links.

Routers and bridges are the two most common ways to connect remote Novell networks. Routers, which are very similar in concept to the internal NetWare mechanism that enables a single file server to contain more than one network interface card, are the simplest to implement. Routing software connects a file server or a dedicated workstation on one network to a server or a workstation on another network. The link can be achieved via a variety of hardware, from simple modem-equipped serial ports (for speeds of up to 19.2 kbps) to complex communications controller cards that use leased phone lines to achieve transfer rates of 1.544 mbps. Once the hardware is installed, the operating system is regenerated to reflect the existence of this new "LAN." The remote sites are now connected in a fashion transparent to end users; file servers on both networks are visible from all network nodes.

Bridges, which are usually used to connect physically (topologically) similar networks (a PC Ethernet network to a DEC Ethernet, for example), attach directly to the network cable rather than to a file server or workstation and are completely transparent to NetWare itself. They provide connection speeds starting at 9600 bps and, in the case of some microwave links, reaching 10 mbps. Standardization of network protocols and a rapidly growing market have enabled manufacturers to build less expensive bridges, which are beginning to compete with routers as the network connection solution.

Novell offers four router software packages for linking remote networks. *Async Remote Bridge* (actually a router) is for speeds of up to 9.6 kbps over a serial modem connection. Novell intends to replace that product with *Link/Async*, enabling speeds of up to 19.2 kbps. The other three offerings, of course, require the appropriate network interface card. *Link/X.25* lets you use private or public data networks (PDNs, such as CompuServe or Telenet) at speeds of up to 56 kbps (64 kbps in Europe). *Link/64* handles point-to-point connections at 56 kbps. *Link/T1* can also directly connect two LANS, but at T-1 (leased dedicated phone line) speeds of 1.544 mbps.

A number of other vendors also make router software and hardware, notably Gateway Communications of Irvine, California, which provides a range of options similar to Novell's. There are several other router and bridge manufacturers; ask your dealer or your NetWare consultant for recommendations.

WHERE TO BUY

Gateway Communications
2941 Alton Ave.
Irvine, CA 92714
800/367-6555, 714/553-1555,
714/553-1616 (fax)

Novell Communications Products Divison
Attn: Product Information
890 Ross Dr.
Sunnyvale, CA 94089
800/221-6402 ext. 4410,
408/747-4017 (fax)

Peter Tait is the network engineering manager at The Lambda Group, a consulting firm and developer of distributed applications.

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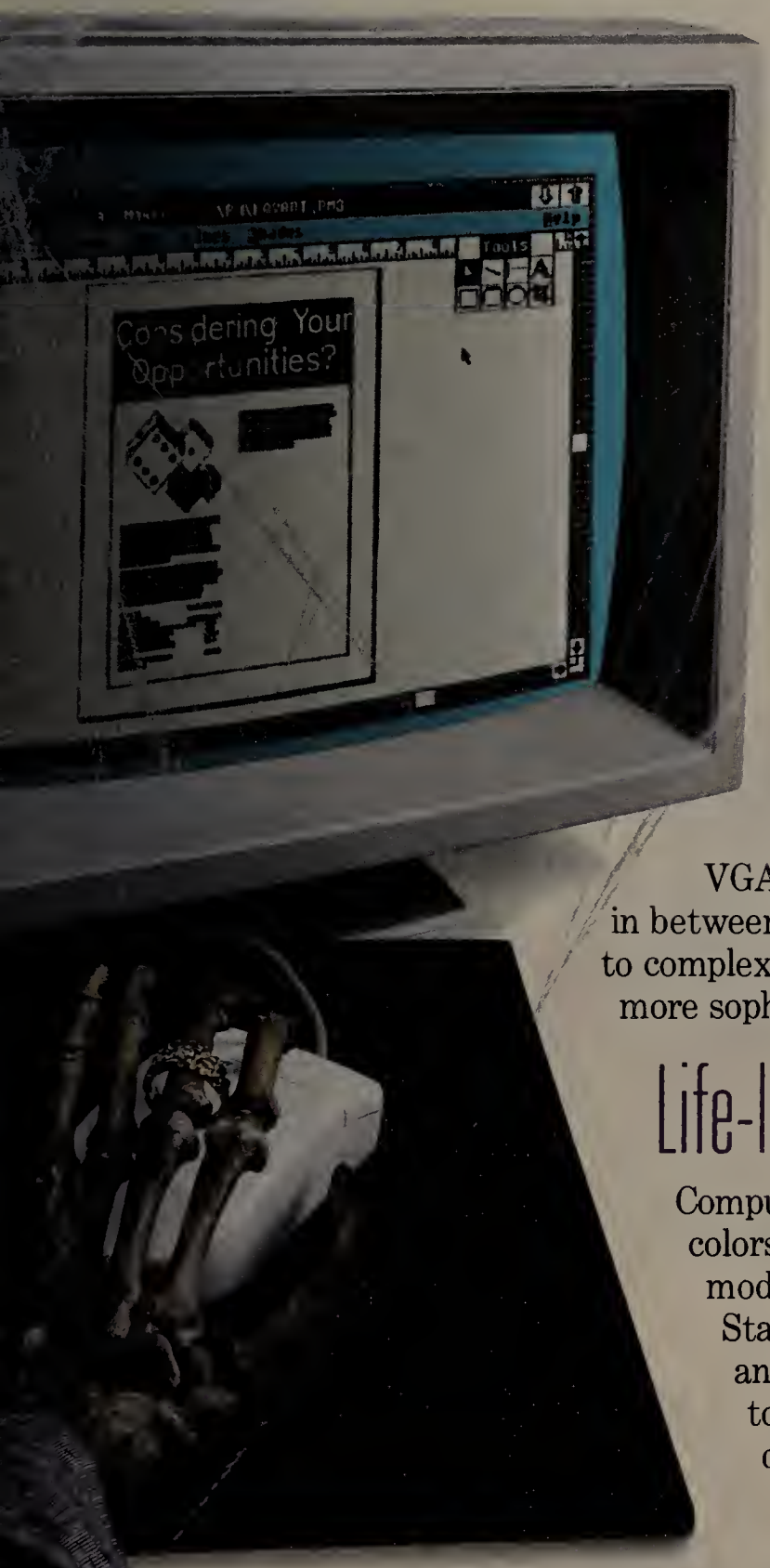

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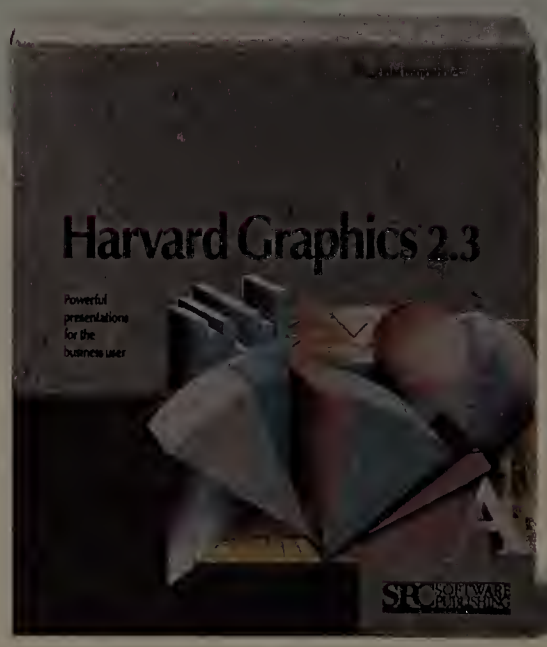

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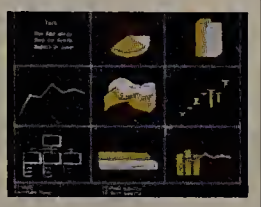

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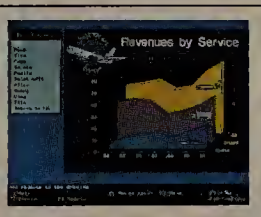

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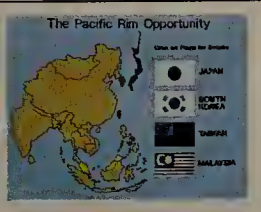

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Circle 278 on reader service card

production, advertising, and other overhead costs low. Compaq has recently lowered its memory prices. But third-party prices that you see in print change rapidly as well, and you'll still pay a premium for genuine Compaq parts. The disparity in memory costs reflects the difference between a Compaq-backed, "safe" purchase and a rock-bottom price from a parts-only supplier.

Drive B:, He Said

Q. *At my hard drive's C:\WS5> DOS prompt, I can type* **ws<Enter>** *to bring up* WordStar, *and then press* **flb:** *and* **<Enter>** *to log on to drive B:. However, when I put those same keystrokes into a batch file, I don't get the same results.* WordStar *comes up logged on to the same default drive and directory (C:\WS5), instead of drive B:. Then, when I quit* WordStar, *'C:\ws5>flb:' appears on screen, followed by the message 'Bad command or file name'.*

I've tried dozens of variations, but none have worked. Can you tell me how to get WordStar *to log on to drive B: automatically?*

Alfred H. Canada
Grants Pass, Oregon

A. Unfortunately, passing keystrokes from a batch file into a program is rarely possible—batch files were never meant to have that capability. But don't despair. There are ways to make *WordStar* log to a specific drive and/or directory.

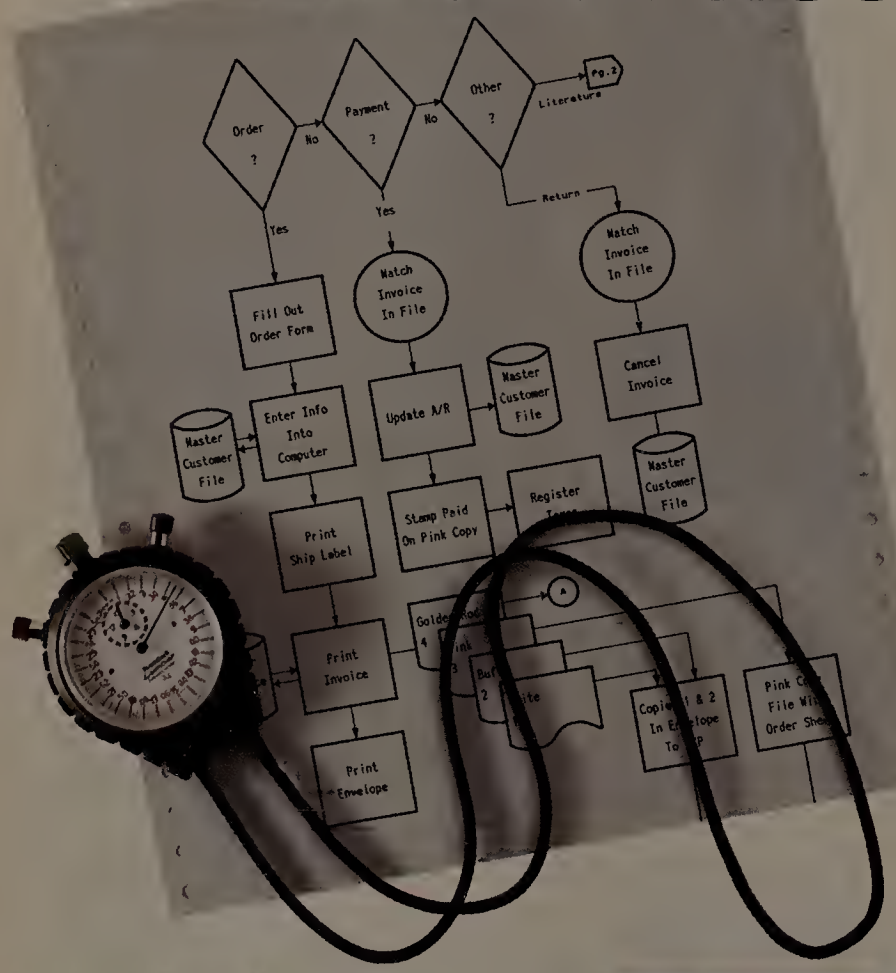
With early versions of *WordStar*, users would patch the program so it knew which drive/directory held its support files; then they'd create a batch file that logged to one drive/directory and called *WordStar* from another. Beginning with version 4.0, however, that procedure has not been necessary. *WordStar* can now be told which drive and directory to log to at startup.

At the DOS prompt, change to your *WordStar* directory and issue the command **wschange**. Since you haven't renamed WS.EXE and don't want to change the name now, press **<Enter>** twice. Press **C** for Computer, **E** for Directory display, **E** for Initial directory log-on, and **Y** for yes. Type **b:**, press **<Enter>**, and type **xxxy** to save the change. Now when you start *WordStar*, the program will automatically log to drive B:.

ASCII File Reader

Q. *I've been searching for commercial PC software that can convert a word processing document into "electronic book" format. I want my users to be able to read the document on screen,* *(continues)*

BY HAND. OR BY NOON.



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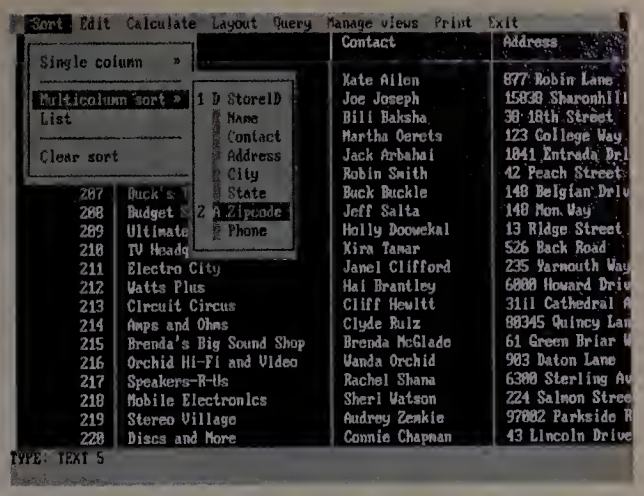

R:BASE 3.0 allows you to look at, edit and ask questions of your data from a single menu. Order your columns with a simple check of a box. And work with your data in a spreadsheet-like layout—locking columns and rows, moving or hiding columns, even copying data from one field to another.

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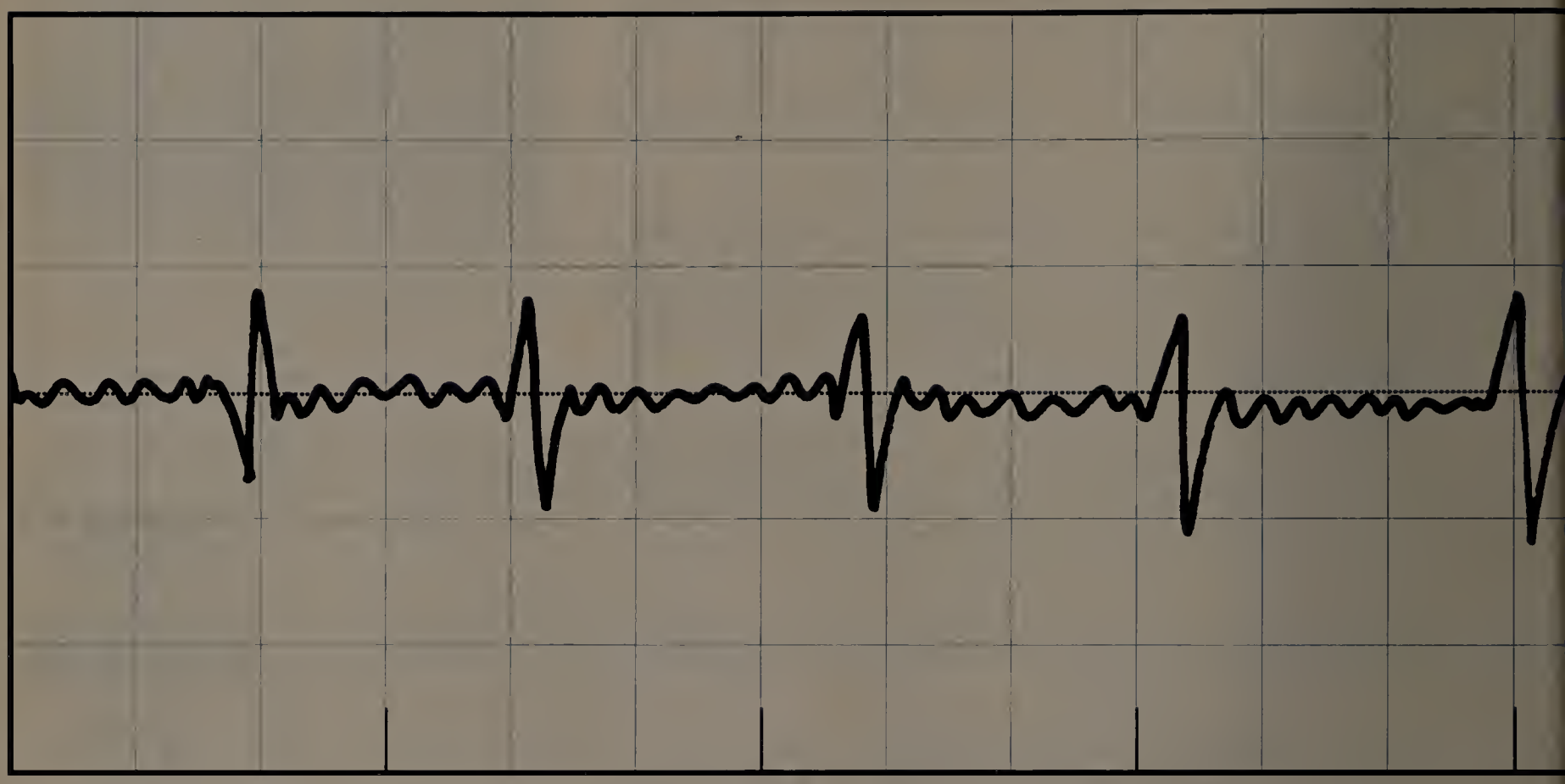

This is what typically happens to people about

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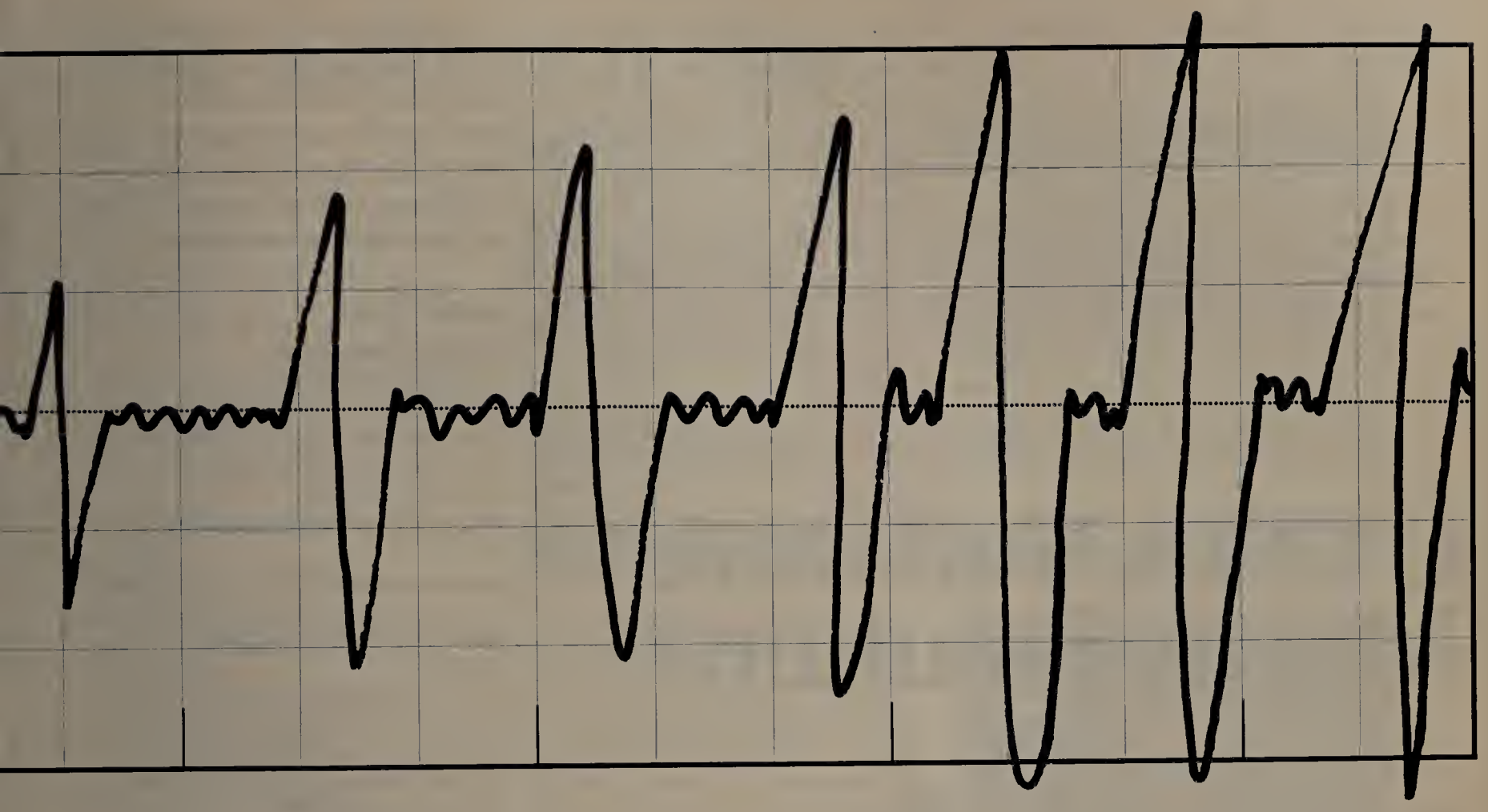
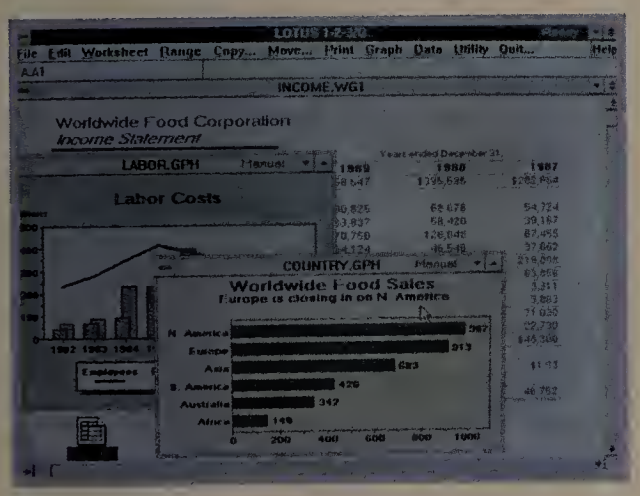


3 minutes into a 1-2-3/G product demo.



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Not surprisingly, 1-2-3/G received the Best Software Product award at its Comdex preview last fall. And PC World has called it a "new high in spreadsheet technology."

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For a free auto-demo or brochure call 1-800-842-8455, ext. 174. And see why your analytical power isn't the only thing 1-2-3/G will elevate.

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extension 174

Introducing the new Lotus 1-2-3/G

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paging up and down as needed. Can you help?

Robert Belyea
Clearwater, Ontario, Canada

A. Meant for software developers and corporate sites, Revolution Software's $5000 *README Professional* produces sophisticated README files, complete with tables of contents, navigation by chapter as well as by line and page, and background printing. The license provides for unlimited distribution of the READMEs you create.

If your users simply need to scroll back and forth through text files, both *List 7.3d* (see "Communications Shareware: The People's Choice" in the Buyers' Guide in this issue) and *Browse* are available as shareware. Both can be found on almost any BBS and are available from PC-SIG (disks #319 and #273, respectively), whose library of shareware contains virtually every shareware product ever released.

WHERE TO BUY

README Professional
Revolution Software
320 Rte. 24
Chester, NJ 07930
201/455-0995, 201/455-0872 (fax)
LIST PRICE: $5000
REQUIREMENTS: 640K, DOS 2.0 or later version
Reader service no. 717

Library of Shareware Disks
PC-SIG, Inc.
1030 E. Duane Ave., Ste. D
Sunnyvale, CA 94086
800/245-6717, 408/730-2107 (fax)
LIST PRICE: $6 each, $1-per-disk surcharge for 3½-inch disks; shareware program license fees separate
Reader service no. 718

More Scientific Word Processors

A March *Help Screen* item offered suggestions to help a severely disabled person draw equations on screen for his math class. Reader Andrea Moncevicz of Northampton, Massachusetts, responds: "*If that student has enough money for* WordPerfect, *then he should invest in* PCTEX, *the PC version of* TEX, *which was designed for mathematicians and physicists who have to write technical papers.* PCTEX *even prepares documents for professional typesetting. However, most students have a very limited budget and should get the inexpensive shareware program* ChiWriter, *from Horstmann Software Design. The program comes with 14 fonts in various styles and faces suitable for mathematical expressions.*"

Unforunately, *ChiWriter* is no longer offered as shareware, and its price has gone up. However, the company's 30-day, no-questions-asked money-back guarantee enables prospective users to try

(continues)

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They Left out Features....

We Left out the COMMA!!

The only thing missing...

is the comma in the price. If you look at the chart on the right you will see prices charged by our competition. All but one contain a comma. DesignCAD 3D sells for $399.00. Period. No Comma!

In order to draw the complex pictures shown below it is desirable to have the following 3D features:

- **Interactive design with 3D cursor**
- **Blending of surfaces**
- **Boolean operations such as add, subtract, and intersection**
- **Complex extrusions**
- **Cross sectioning**
- **Block scaling**
- **On screen shading**
- **Shaded output to printers and plotters**

All of these competitors left out one or more of these desirable features in their standard package. They didn't forget the most horrible feature - the comma.

DesignCAD 3D offers **ALL** the listed features plus many more!

If DesignCAD 3D has the power to create the 3D objects shown below, imagine how it could help with your design project!

DesignCAD 3D sells for $399. We left out the comma. We didn't think you would mind!

PC MAGAZINE SAYS...

DesignCAD 3D, the latest feature-packed, low-cost CADD package from American Small Business Computers, delivers more bang per buck than any of its low-cost competitors and threatens programs costing ten times as much. For a low-cost, self-contained 3D package... DesignCAD's range of features steals the show."

$399

AutoCAD rel. 10	$3,000.00	AutoCAD AEC $1,000.00 AutoShade $500.00
CADKEY 3.12	$ 3,195.00	Solids $995.00 IGES translator $1,995.00
DataCAD with DC Modeler	$ 3,990.00	DataCAD Velocity $2,000.00
DesignCAD 3D ver. 2.0	**$ 399.00**	**NO expensive options! IGES Free, Shading Free**
MaxxiCAD 1.02	$ 1,895.00	N/A
Mega Model	$ 995.00	MegaDraw $195, List $295, MegaShade $395
MicroStation PC 3.0	$ 3,300.00	Customer Support Libraries $1,000.00
ModelMate Plus 2.8	$ 1,495.00	N/A
VersaCAD Design 5.4	$ 2,995.00	N/A

Source: Byte Magazine

BYTE MAGAZINE SAYS...

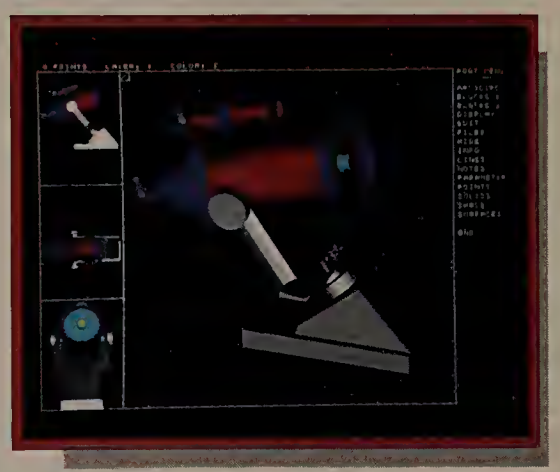
"At $399, DesignCAD 3D was the least expensive package we saw, yet it was one of the more powerful. ..Don't be fooled by the remarkably low price, this program can really perform!"

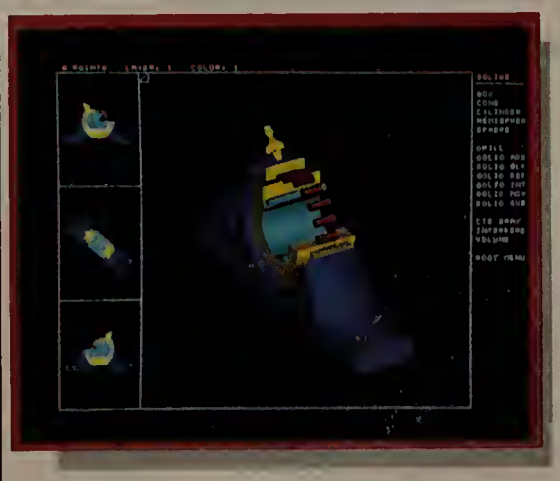
Complete 3-Dimensional design features make it easy for you to construct realistic 3-D models. With full solid-object modeling capabilities you can analyze your drawing to determine the volume, surface area or even center of gravity! DesignCAD 3-D even permits you to check for interference between objects! Aeronautical Engineers can now find the center of gravity for a new airplane design with a couple of keystrokes. The Architect can determine the surface area of a roof for decking in a matter of minutes. The Civil Engineer can calculate the volume of a lake or dam in seconds. The Mechanical Engineer will know for sure if certain parts fit together without interference. The uses for DesignCAD 3-D are only limited by YOUR imagination!

HOW DO I GET ONE?

DesignCAD 3-D and DesignCAD 2D are available from most retail computer stores, or you may order directly from us. If you have questions about which program to purchase please give us a call. All you need to run DesignCAD 3-D is an IBM PC or compatible computer with 640 K RAM memory and a hard disk. Both products support most graphics cards, printers, plotters and digitizers. Free Information and a demo disk are available by faxing (918) 825-6359 or telephoning:

1-(918) 825-4844





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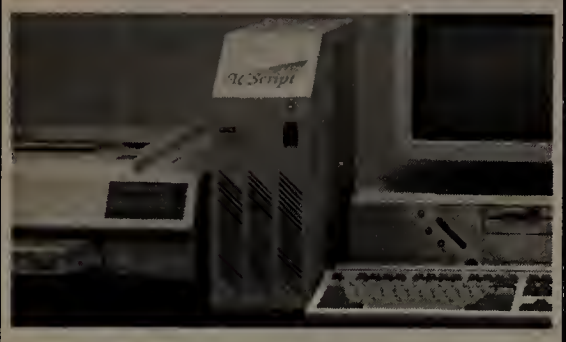

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out the program to see if it fits their needs.

I've discovered two more products that let users work with equations on screen. *MathEdit 2.0* can build very large equations easily and quickly. The program comes with 25 fonts (math

MathEdit 2.0 produces high-resolution output.

characters, Greek characters, and regular, italic, and bold Courier, each in five sizes from 5 to 12 points). A $149 soft-font package that generates 18- and 24-point type is also available. *MathEdit 2.0* produces high-resolution output, second only to *PCT$_E$X*, in TIFF, PIC, EPS, T$_E$X code, and *Lotus Manuscript* formats. There's a low-cost version for dot matrix printers only, which is available at a discount for students, as well as a *T$_E$X*-only version.

Exact is a memory-resident utility that lets you insert mathematical expressions into documents created by most word processors. A free demo disk is available.

For more information about all products in this item, circle reader service no. 912.

WHERE TO BUY

ChiWriter
Horstmann Software Design Corp.
4 N. Second St. #500
San Jose, CA 95113
408/298-0828, 408/298-6157 (fax)
LIST PRICE: $149.95, academic discount $119.96
REQUIREMENTS: 384K, DOS 2.1 or later version
Reader service no. 719

Exact
Technical Support Software Inc.
72 Kent St.
Brookline, MA 02146
617/734-4317, 617/734-4160 (fax)
LIST PRICE: $495, academic discount $384.25, government discount $445.50, demo disk free
REQUIREMENTS: 55K–120K, DOS 2.0 or later version; call or write for list of supported word processors
Reader service no. 720

MathEdit 2.0, MathEdit 2.0 for Dot-Matrix Printers, MathEdit 2.0 T$_E$X version
K-Talk Communications, Inc.
30 W. First Ave. #100
Columbus, OH 43201
614/294-3535, 614/294-3704 (fax)
LIST PRICE: $199; Dot-Matrix Printers version $129, academic discount $79; T$_E$X version $129
REQUIREMENTS: 420K, DOS 2.1 or later version
Reader service no. 721

PCT$_E$X
Personal T$_E$X
12 Madrona Ave.
Mill Valley, CA 94941
415/388-8853, 415/388-8865 (fax)
LIST PRICE: $499
REQUIREMENTS: 512K, DOS 2.0 or later version
Reader service no. 722

How does...? What can...? Should I...? Send your PC questions to The Help Screen; *for details see How to Contact PC World, page 4.*

POWER TIP NO. 108

More Ways to Delete With WordPerfect

WordPerfect 5.x provides a variety of ways to delete text. Here are two not listed in the manual. If the cursor is on the first letter of a word or in the space between two words, pressing **<Home><Backspace>** deletes the preceding word. If the cursor is on the first letter of a word, pressing **<Home><Delete>** deletes the word. If the cursor is anywhere within a word, that same key combination deletes to the end of the word.

Sue Kim
San Francisco, California

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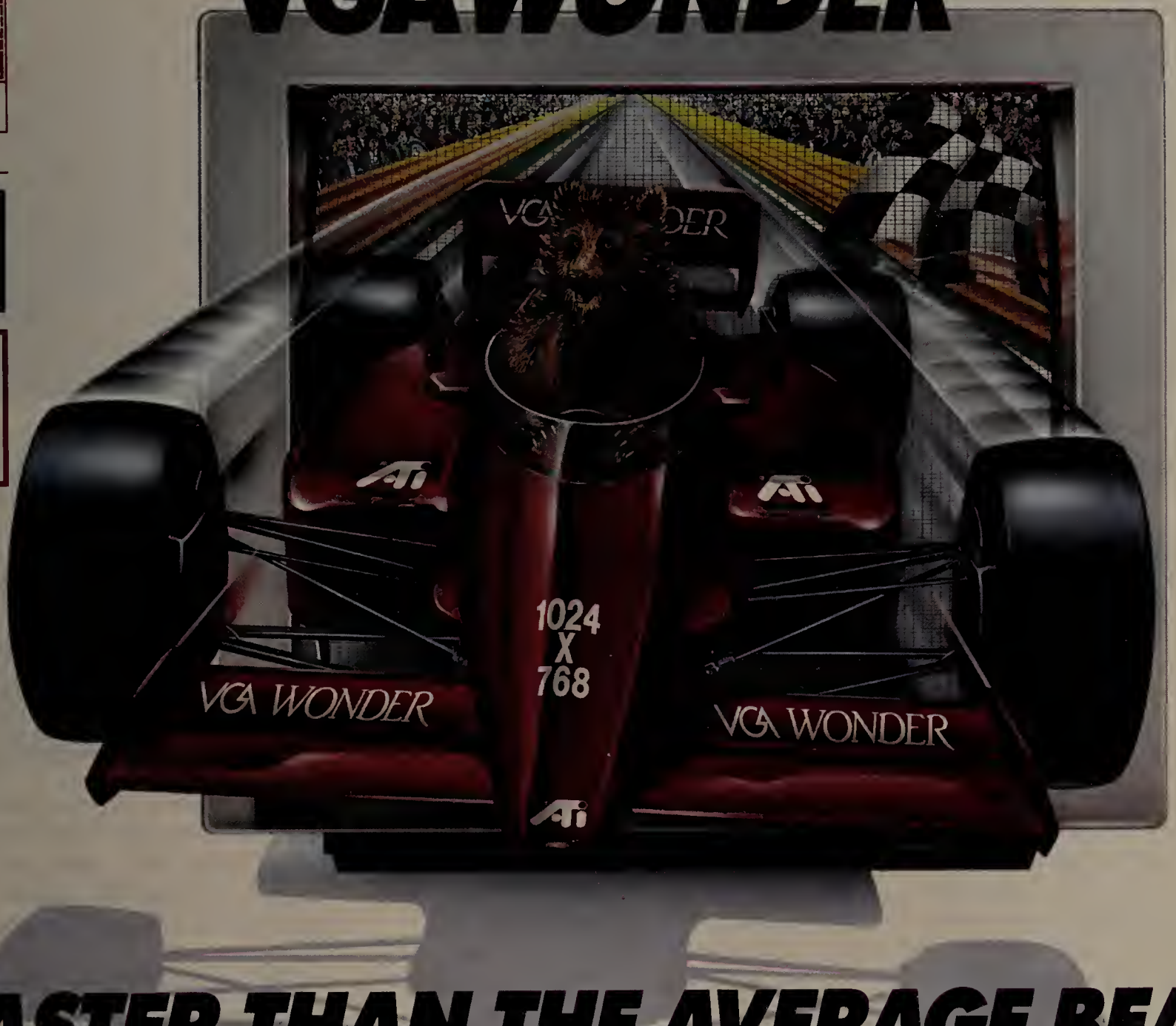

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Fax: (416) 756-0720

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Why didn't someone do this before?

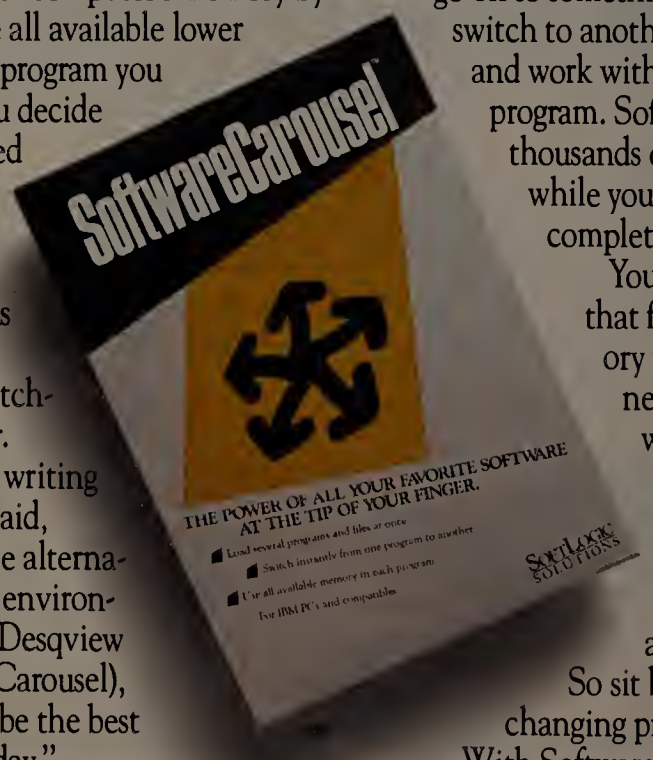
Actually, a lot of people tried. But what they ended with were a bunch of fancy software "environments" that eat up memory, change the way you work, and boggle the mind with complexity.

Plus, a lot of them make you buy new "compatible" software applications. Some even make you buy a bigger computer.

Software Carousel, on the other hand, works with the programs you already own. So you can go on using 1-2-3, WordPerfect, dBASE, SideKick, any program that runs on the computer you use right now. In an absolute minimum of memory. Without changing anything about the way your software runs.

Best of all, Software Carousel makes the most of your computer's memory by letting you use all available lower RAM in each program you use. And if you decide to add extended or expanded memory, Software Carousel works with that too, and makes switching even faster.

Garry Ray, writing for PC Week said, "Of these three alternative operating environments (OS/2, Desqview and Software Carousel), Carousel may be the best choice of the day."



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CONSUMER WATCH

Advice and information for the computer consumer

You must weigh several factors when deciding whether to upgrade your software.

Roberta Furger

Easing the Upgrade Headache

In the software business, upgrades are the name of the game. It's the way software developers stay competitive and users get access to the latest and greatest features. But upgrades aren't without their problems, particularly in the corporate environment, where each round of upgrades, however trivial, can mean an inordinate amount of time spent moving users to the latest version.

A Matter of Choice?

For individuals, deciding whether or not to upgrade *should* come down to the question, Do I need the added features? If the answer is no, then it probably makes little sense to pay the price of an upgrade and go through the hassle of installing the program, transferring files, updating templates, and so on. Unfortunately, the decision is rarely that simple.

One variable you need to consider, for example, is whether or not you'll continue to receive satisfactory technical support if you stick with an old version of a package. Software developers almost uniformly say that they continue to support all prior versions. But despite this pledge, some users have found that the response to a question on an out-of-date version is often that the problem has been fixed in the latest release. The result, they say, is that a technical support call becomes a sales call.

Users also report that the response time for questions on prior releases can be considerably longer than for questions about the current version. Developers note, however, that the delay affects a minority of callers. Most questions, they say, concern the latest release, since users generally require technical assistance while they're learning to use a package.

Finally, there's the hardware issue to consider. At some point, added features take their toll on your system, demanding more hardware in return for added capabilities. Not every user is willing (or able) to make that added investment.

Added Complications

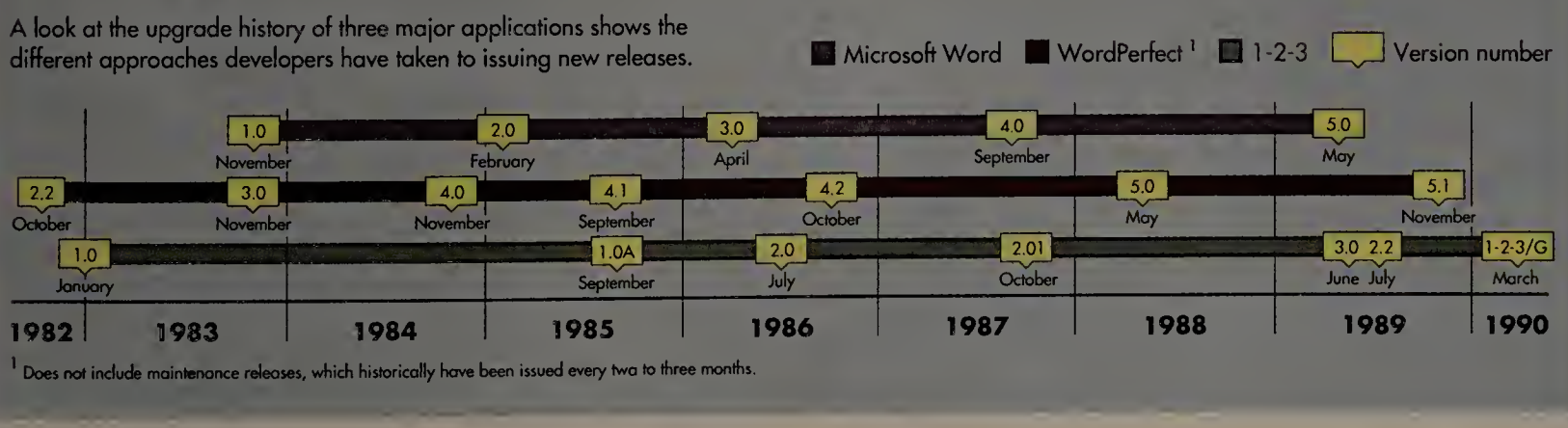
The upgrade decision becomes even more complex at the corporate level, where department heads must consider all the issues facing a single user, *plus* questions of compatibility with the rest of the company. They must also take into account the downtime that's inevitable when users have to install and learn a new version of an application.

Fortunately, however, software companies have been listening to the concerns of their corporate customers. We're beginning to see a trend in which developers keep upgrades to a minimum and offer corporate users some options when it comes to deciding when

(continues)

How the Upgrade Game Is Played

A look at the upgrade history of three major applications shows the different approaches developers have taken to issuing new releases.



[1] Does not include maintenance releases, which historically have been issued every two to three months.

ANTHONY RUSSO

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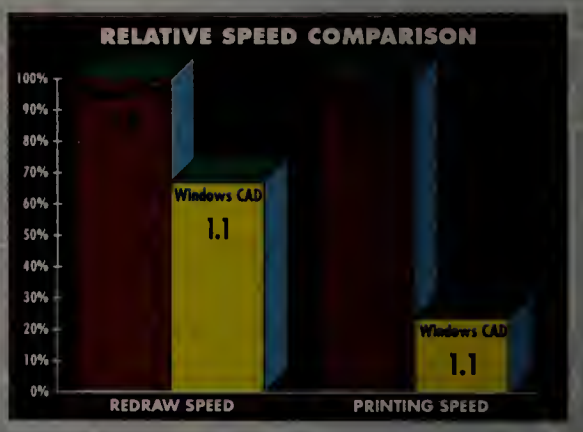

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and if to upgrade.

Microsoft, for example, continues to sell documentation and site license copies of *Word 4.0*, even though it's been selling *5.0* for over a year. Companies that have *Word* installed on a server and want to add new users can therefore do so without forcing the entire group to switch to a new version. And when organizations do decide to upgrade their users, Microsoft offers them the option of buying a master copy with which they can upgrade all existing users. WordPerfect, for its part, sells "multipacks" of its software that include anywhere from 5 to 200 copies of the program but a minimum number of copies of the documentation.

The Ultimate Solution

From the users' perspective, the best solution would be simply to reduce the number of upgrades released for any given product. This would require a more extensive beta-test cycle to ensure clean product releases and eliminate the need for interim "bug" fixes. It would also take a conscious effort on the part of developers to update products only when the breadth of new features merited the move, not simply when marketing considerations made an upgrade attractive.

The good news is that a variety of factors are prompting developers to minimize upgrades. Development constraints and the comments of customers have led many companies to reconsider earlier (and sometimes artificial) upgrade schedules. Time will tell how true developers stay to their stated goal of reducing the number of upgrades, but it's good to know they're getting the message.

SHOP TALK

The Waiting Game

In late December I took my Toshiba T1200HB to an authorized repair shop (Micro Solutions in Danbury, Connecticut) for repair of a burned-out power supply. Micro Solutions has been most helpful and willing to fix the unit, but without parts they can't resurrect the dead. They have had power supplies on order with Toshiba America since December 13.

The message is that if you can go months without your business tools and have 20 to 30 minutes at a time to listen to elevator music while you wait for telephone assistance, Toshiba has a system that's right for you.

Les Manse
District Sales Manager
The Knotts Company
Berkeley Heights, New Jersey

Toshiba responds: Although we are committed to providing the highest quality of service, our rapid growth has caused occasional parts shortages. Recognizing this, we have instituted several *(continues)*

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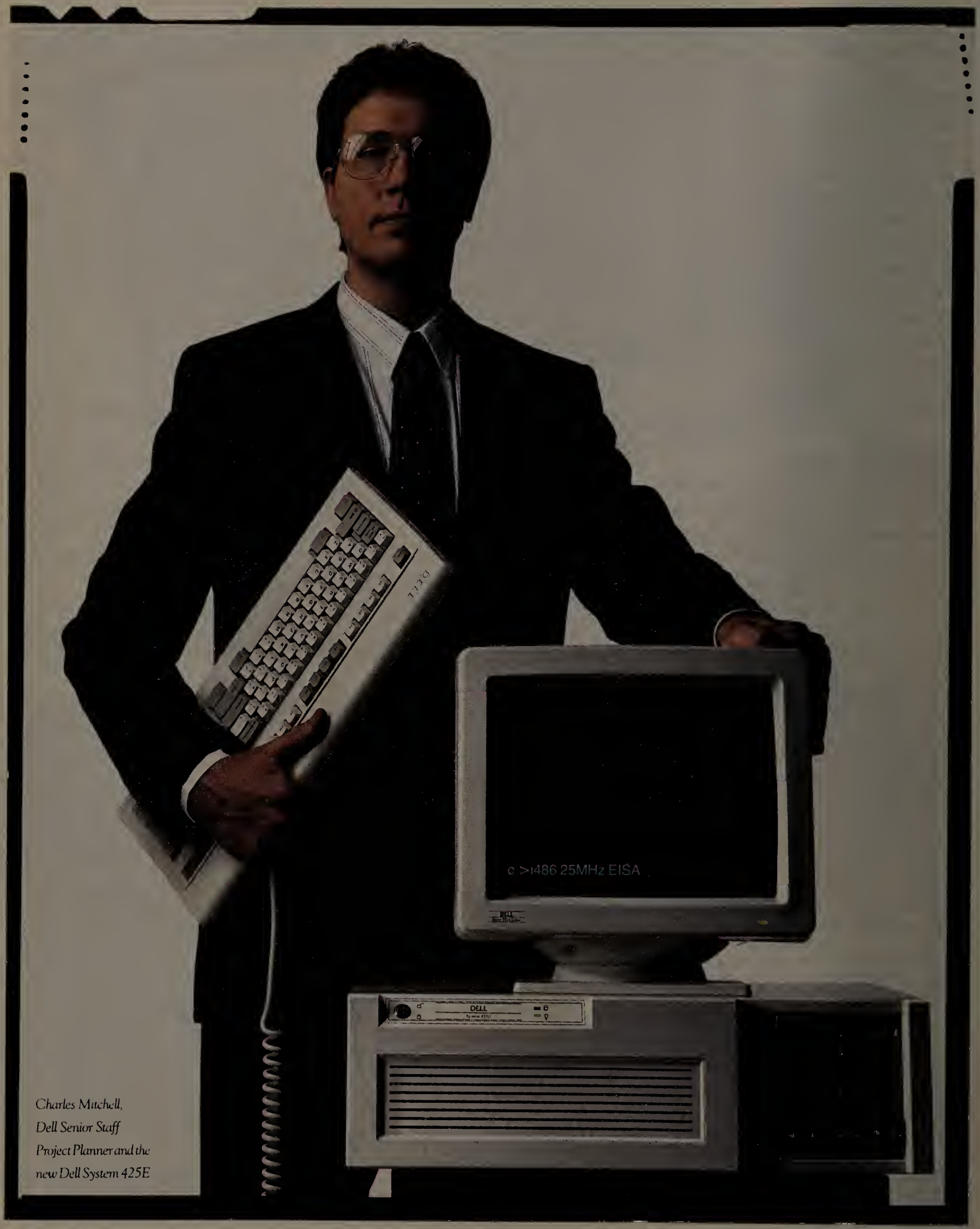

Charles Mitchell,
Dell Senior Staff
Project Planner and the
new Dell System 425E

The Dell System 425E is a Class A device sold for use in commercial environments only. *Performance Enhancements: Within the first megabyte of memory, 384 KB is reserved for use by the system to enhance performance. The Dell 425E is photographed with optional extras. All prices and specifications are subject to change without notice. Dell cannot be responsible for errors in typography or photography. **Payment based on 36-month, open-end lease. Leasing arranged by Leasing Group, Inc. In Canada, configurations and prices may vary. DELL SYSTEM is a registered trademark and Dell and 425E are trademarks of Dell Computer Corporation. Intel is a registered trademark and i486, 486 and 386 are trademarks of Intel Corporation. †Based on Compaq's published price list dated March 5, 1990, for Compaq DeskPro 386/33 Model 84, with 80387 coprocessor, 84 MB hard drive and video graphics monochrome monitor, and DeskPro 486/25 Model 120, 120 MB hard drive and video graphics monochrome monitor. UNIX is a registered trademark of AT&T in the United States and other countries. Other trademarks and trade names are used to identify the entities claiming the marks and names or their products. Dell Computer Corporation disclaims any proprietary interest in trademarks and trade names other than its own. ‡On-site service may not be available in certain locations. For information on and a copy of Dell's 30-Day Total Satisfaction Guarantee, limited warranty, and Xerox's service contract, please write to Dell Computer Corporation, 9505 Arboretum Boulevard, Austin, TX 78759-7299. Attn: Warranty. ©1990 Dell Computer Corporation. All rights reserved.

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Return this postage-free card and we'll mail you the new Dell Catalog with information on our brand new EISA 486 and 20 MHz 386SX computers.

( ) Please have a Dell Representative call me.

Name: (M) _____
Please Print

Title: _____

Company: _____

Address: _____

City: _____ State: ____ Zip: _____

Type of Business: _____

Approx. # of Employees in Company: _____

Home Phone: ( ) _____

Business Phone: ( ) _____

Fax #:( ) _____

1. Which products are you most interested in?
   - ☐ 286-based systems
   - ☐ 386™-based systems
   - ☐ 386SX-based systems
   - ☐ 486™-based systems
   - ☐ UNIX®-based systems
   - ☐ Laptops
   - ☐ Other: _____

2. Are you interested in computer products for:
   ☐ Home ☐ Business ☐ Resale

3. How many PC's does your company plan to purchase in the next twelve months?

Quantity	Timeframe	Quantity	Timeframe
_____	Less than 1 month	_____	6-12 months
_____	1-3 months	_____	More than 12 months
_____	3-6 months		

4. What do you plan to use computer products for?
   _____
   _____
   _____

5. How many PC's do you have installed now at your company? _____

6. Are you interested in leasing?
   ( ) Yes ( ) No

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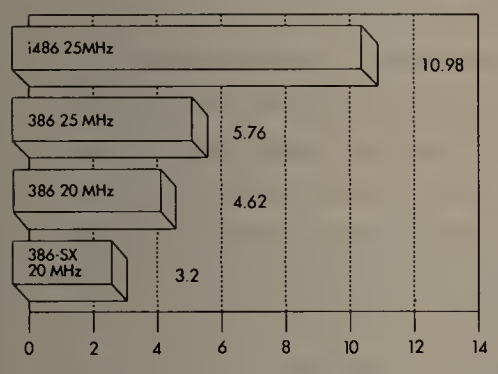
IN HIS WORDS.

In my opinion, the new Dell™ 425E™ sets the standard for i486™ 32-bit EISA I/O bus systems.

The Dell 425E delivers almost twice the MIPS of the Dell System® 325. Which gives me accelerated throughput for my power applications, especially when running 32-bit software. At the heart of the Dell 425E is Intel's® 32-bit i486 microprocessor, today's new definition of PC performance.



The i486 increases performance by its burst transfer capabilities and by reducing the complexity of some of the more commonly used 386™ instructions. Therefore, the instructions execute in fewer clock cycles.

But, those aren't the only performance improvements.

The processor's 8 KB internal cache gives you zero-wait-states for most memory accesses. And, the integral math coprocessor gives you all the capabilities of the 80387, with up to five times the performance on floating point instructions.

The Dell System 425E also has a high performance 32-bit EISA bus architecture that not only lets me expand my system with peripherals that have double the data path and up to eight times the data transfer rate of an ISA (PC/AT bus) system.

I can also use my 8-bit and 16-bit ISA cards without any problem. And I can select from the new high performance 32-bit cards, including EISA bus masters. With this kind of flexibility I'll never have to deal with an ISA only 486.

In conclusion, I believe it's the most sophisticated and powerful system for the money in the business.

It's really that simple.

THE NEW DELL SYSTEM 425E 25 MHz i486 EISA.

- i486 microprocessor, running at 25 MHz.
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Prices listed include 4 MB of RAM. 100 MB hard drive configurations also available.

IN ENGLISH.

Okay, it's time to come back to earth. You want a computer that's fast. Powerful. And affordable.

The new Dell System 425E is it.

It's perfect for running sophisticated applications, and easy enough to use even if you don't have a degree in Boolean Logic.

It's also only $7,899.

Which makes it $4,454 less than Compaq's 33 MHz 386 and $6,355 less than Compaq's 25 MHz 486.†

Best of all, all this advanced technology comes with the down-to-earth support and service from Dell.

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It's really that simple.

ABOVE AND BEYOND THE CALL.

DELL COMPUTER CORPORATION

Circle 318 on reader service card

major programs to improve our service capabilities.

Mark Fritz
Field Service Director

Editor's note: Toshiba has offered to extend Mr. Manse's warranty for one additional year.

Video Board Makes Program Freeze

When I ran *SuperCalc5* for the first time on my Zenith PC, the program looked as nice as the ad proclaimed. I was particularly interested in the program's advanced graphing capabilities, so I entered some data and set up the graph. When I tried to view it, the PC locked up. I tried a few more times, with the same results. The system locked up whenever I tried to exit the program as well.

Over the months that followed, I spoke with several *SuperCalc* technical representatives, who assured me that the problem was caused by my Zenith ZCM 1490 monitor and that a forthcoming update would correct the problem. The update never arrived.

I returned the software and documentation in November and requested a refund of my upgrade fee, but as yet I have not received it.

Matthew Pohl
Westminster, Colorado

Computer Associates responds:
SuperCalc5's incompatibility with Mr. Pohl's monitor is hardware related and has been acknowledged by Zenith. The workaround is to set DIP switch 5 on the video board to off. In addition, *SuperCalc5* revision C, released in January, eliminated the need for this workaround. Mr. Pohl should have been told these details when he consulted our technical support group.

There was a delay in refunding Mr. Pohl $105 for his upgrade of *SuperCalc5* because he returned it without a return merchandise authorization number. We attempted to contact him several times in January to obtain the information required to issue the credit.

To reestablish our relationship with Mr. Pohl and to show our commitment to customer service, Computer Associates has offered to send him a free copy of *SuperCalc5* and to provide six months of toll-free technical support.

Tracy L. Beaufort
Manager, Public Relations
Computer Associates International

Who Should Be Notified of Defective Equipment?

Consumer Watch received a letter from Judy Baier, a self-employed data base consultant in Fairbanks, Alaska, regarding her difficulties getting problems with her Hyundai Super 286C properly diagnosed and corrected.

In a letter to Hyundai, Ms. Baier writes, "Less than a month after purchasing my system in July 1989, I began

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In the March 1990 issue, ***PC World*** tested several database management software packages, including products such as Q&A 3.0®, Reflex®, FormBase® and Alpha Four™. The results confirmed that there is only ***one*** product worthy of the coveted Best Buy award.

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Circle 37 on reader service card

receiving various sporadic hard disk error messages. I immediately took my Hyundai to my dealer to have it serviced, but the dealer found nothing wrong and received no error messages. I took my PC home, but the error messages continued, and over the next few months I continued to take my PC to my dealer to have it inspected. It was not until December 1989 that my dealer was made aware (by sources other than Hyundai) that some of the 286C models had defective motherboards.

"My dealer called Hyundai to confirm the possibility of a defect, and finally a new motherboard was shipped.

"I understand that manufacturers' defects occur, but I am very upset that neither my dealer nor I was officially notified of a defect that was supposedly discovered back in September of 1989.

"I registered my system with Hyundai when I first purchased it so I could be notified of any problems. Had I been notified earlier, my motherboard would have been replaced without my experiencing days of downtime and a loss of income."

According to Nick Naimo, Hyundai's vice president of operations, the company notified all its authorized dealers that a faulty chip on motherboards in some 286C systems was causing premature battery drain. In its bulletin to dealers, Hyundai said it would replace motherboards and supply new batteries for systems brought in for repair while still under warranty.

Hyundai should have notified all 286C owners of the potential problem.

Problems with some 286C systems were first reported to Hyundai last May. At the end of August, the defect was identified and dealers were notified. It took several months to nail down the problem, according to Naimo, because the battery drain manifested itself in a variety of ways.

Hyundai did not, however, send notices to customers who had turned in warranty cards. According to Naimo, the problem, while limited to a small percentage of the systems, was not confined to a particular run, and so affected systems could not be easily identified. "There was no need to send a notice to customers, since they may or may not have been affected," he explains. As of April 1990, Hyundai had repaired 4000 systems, out of about 100,000 sold.

Consumer Watch believes that although the defect was limited to a small percentage of systems, Hyundai should have made every effort to notify all registered owners of 286C computers of the potential problem. As Ms. Baier's case shows, sending notification to dealers

(continues)

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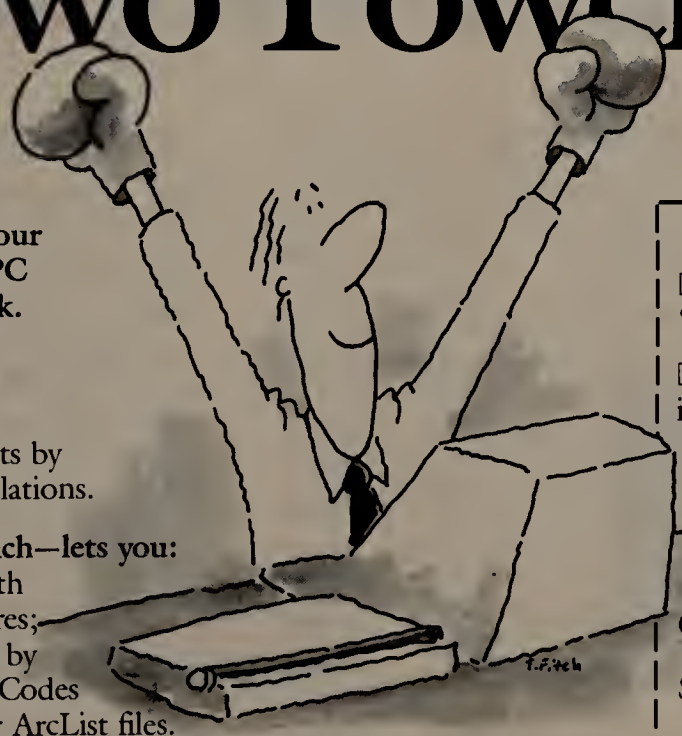

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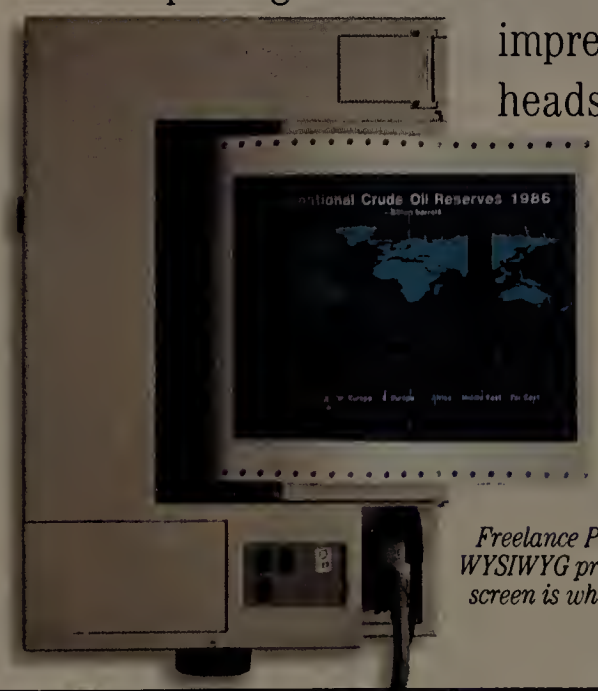
Now, it's easy to keep your audience

Just use Freelance® Plus, the business graphics package from Lotus.® It lets you produce impressive slides, overheads and handouts without demanding the design skills of Da Vinci or the stamina of an all-night disk jockey.



Freelance Plus provides a device-aware WYSIWYG preview. So what you see on the screen is what you get from your printer.

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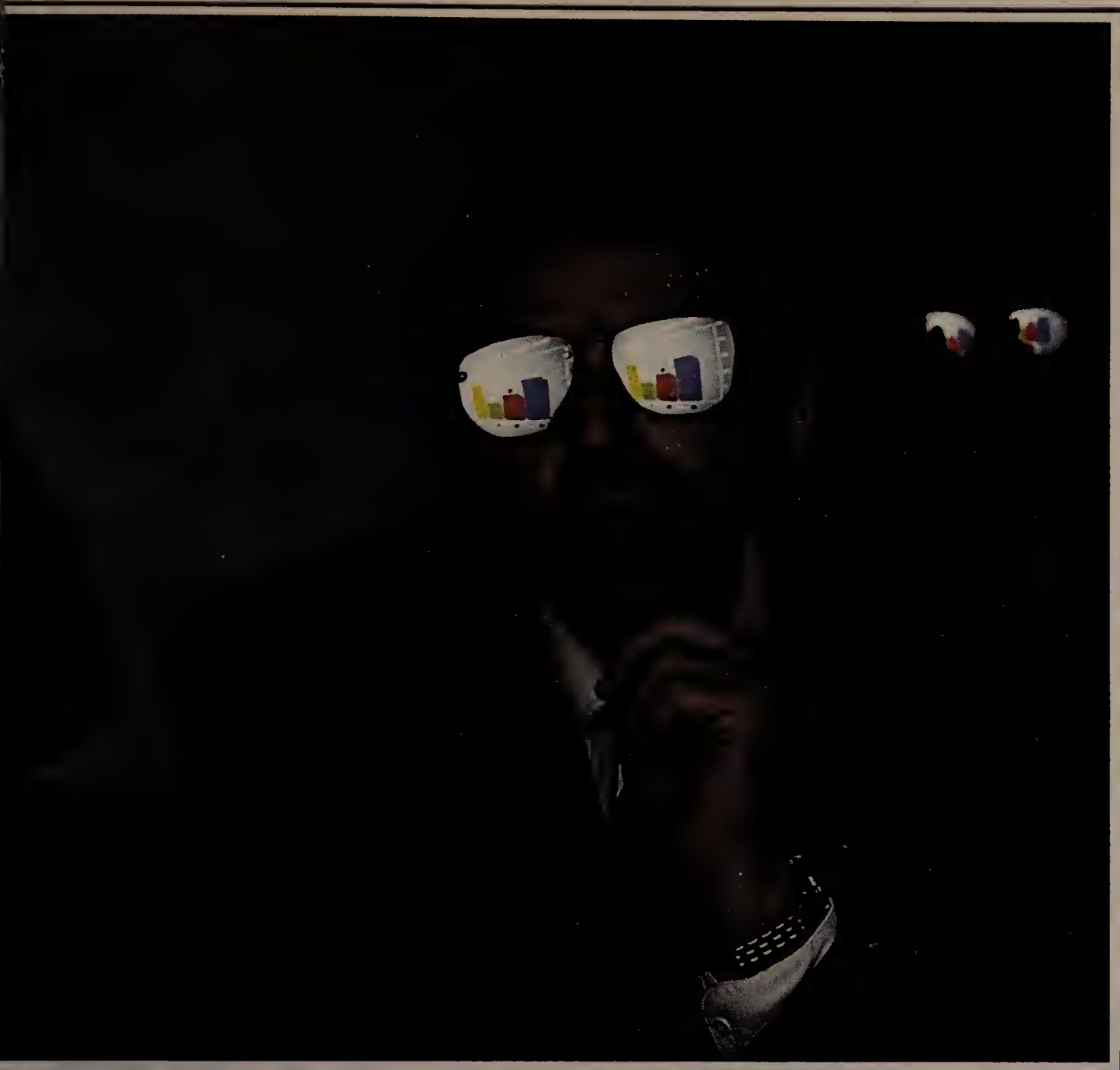


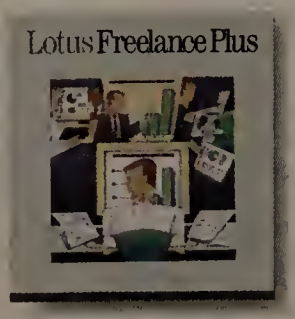
wake without losing a lot of sleep.

There's also an extensive set of automated drawing tools, that makes it easy to edit and annotate data-driven charts, or create flow charts and other conceptual diagrams.

Everything is fully integrated too, not a series of programs bundled together like other graphics packages. So you can move easily from one function to another without complicated commands and unnecessary keystrokes.

Freelance Plus is also the one graphics program designed to work seamlessly with Lotus 1-2-3.® So you can view your actual spreadsheet while creating your chart without ever leaving Freelance Plus.

No wonder every major personal computing magazine has given Freelance Plus one award after another.



For a free demo disk, call **1-800-842-8455, extension 809.** You'll see how you can make great presentations and still end up where you belong the night before a big meeting: home in bed.

Lotus Freelance Plus 3.01

*For more information on upgrading to Freelance Plus 3.01 call 1-800-TRADEUP © 1990 Lotus Development Corporation. Lotus, 1-2-3, and Freelance are registered trademarks of Lotus Development Corporation.
Software Digest's award was presented for Freelance Plus Release 3.0. Release 3.01 is identical, but uses less memory.

did not guarantee that the problem would be corrected in a timely fashion.

Hello? Hello?

In a recent letter to *Consumer Watch*, T. C. Wisniewski writes of difficulty obtaining technical support from DacEasy of Dallas, Texas. According to Mr. Wisniewski, "It was very difficult to get through to a real person at DacEasy. I briefly spoke with a human being who put me on hold until another human being put me on hold until a machine asked me to leave a message. I attempted to call DacEasy at both its numbers, but I usually ended up with a machine that instructed me to leave a message and wait for someone to get back to me sometime within the next 48 hours.

It was difficult to get through to a real person at DacEasy. I usually ended up with a machine.

"For two days I had a CPA [hired to help install the package] sitting around waiting for customer support to call us back. I cannot tolerate that type of customer support. My CPA gave up and went out and bought Peachtree."

Allen Walker, director of technical services at DacEasy, says the company "wasn't staffed for demand" during the time Mr. Wisniewski required help. As a result, it was taking two to three days to get back in touch with customers, instead of the 1-hour response time the company strives for.

Walker notes that DacEasy has added 20 new technical support specialists and has eliminated the voice messaging system. All calls are now answered by one of the technical support staff.

(continues)

POWER TIP NO. 109

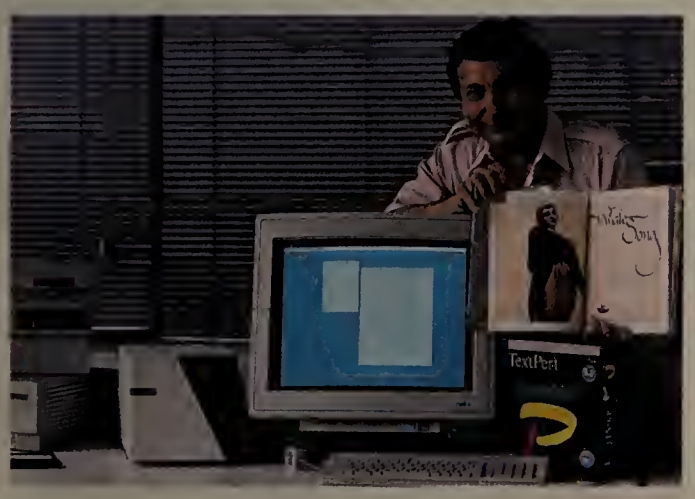
Quick Totals for 1-2-3

After you have entered a column of numbers in *1-2-3* or a compatible spreadsheet, you can use this macro to place a dashed line and an @SUM() function beneath the column quickly and easily. Enter the label **'\-{down}@sum({up 2}.{end} {up})~** in an out-of-the-way cell. Use */Range Name Create* to name the range **\s**. To use the macro, place the cell pointer in the cell directly below the column of numbers you want summed, and press **<Alt>-S**.

Ross D. Garside
Sunbury, Pennsylvania

TextPert reduces your data entry costs

Award winning photographer and publisher, Robert Goodman has created several books using traditional methods. Although his books were award winners... "The bad news", says Goodman, "arrived daily with high bills for typesetting, design, paste–ups..., the list seemed endless".



By using TextPert™ in creating **Whale Song**, Goodman saved valuable time and money without compromising on quality.

"I chose TextPert™ because it is a fully professional program and will not only stay ahead of its competition, but lengthen its lead", says Goodman.

TextPert™ is an automatic & trainable OCR . It requires only 1Mb RAM on Macintosh or 640Kb on the PC. TextPert™ performs high professional data entry at speeds of up to 5000 characters per minute in 34 different Roman languages, as well as Hebrew, Cyrillic and Greek.

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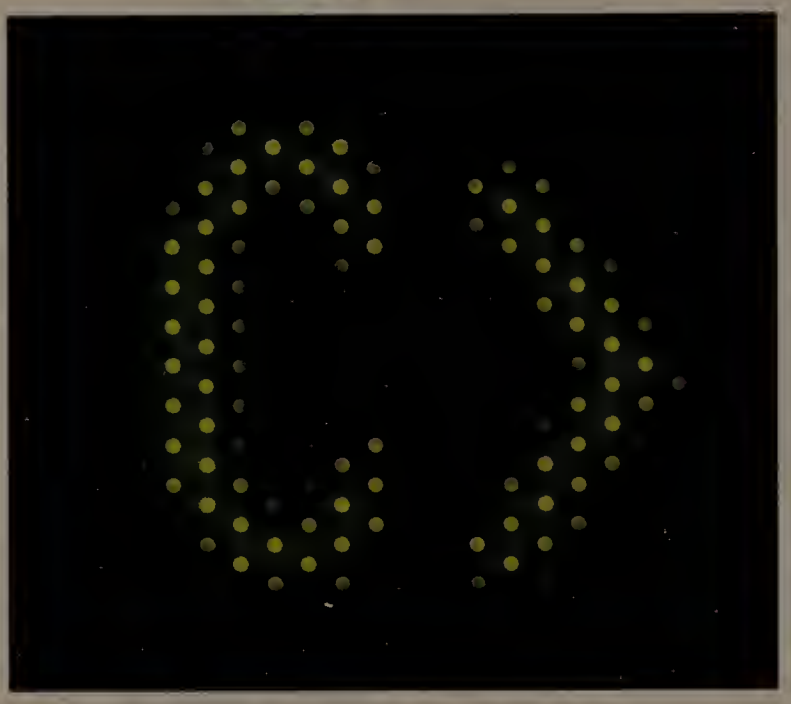


Introducing new Windows 3.0.

The graphical user interface (GUI) environment on an MS-DOS® PC, and subsequent demise of the "C" prompt, is a reality today. Sure, you say.

Microsoft realizes you may have heard this one before. And we agree that you have every reason to be skeptical.

Well, all of this was before new Microsoft® Windows™ version 3.0. A GUI environment that will forever transform the way you use your PC.

Now, before you wonder what to do with all of your existing DOS applications (to say nothing about your existing DOS experience), the Windows environment works within your MS-DOS system. This is not a traumatic thing.

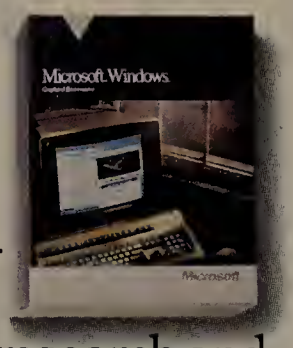
As a matter of fact, once you see the environment created by Windows 3.0, you'll think quite the contrary.

The first time you see it, you won't believe it. Archaic characters, mundane instructions, and even entire command sequences, have been replaced by a program manager full of clear, friendly icons. You're immediately comfortable.

When you work on more than one thing at a time, you'll quickly reap the benefits. Because the program manager welcomes on-screen multitasking of large Windows applications. Of course, without ever visiting the "C" prompt.

Through something with the complicated name of Dynamic Data Ex-

change (DDE), you can simplify your life. For example, with DDE, you can change information in a Microsoft Excel spreadsheet, and have those changes automatically show up in a "linked" table in a word processing document. Or vice versa.



You can also easily access a network from within Windows. So, no matter how big the rivalry between research and accounting is on the softball field, everybody's on speaking terms in the office.

Even the setup program is graphical, only needing a few easy steps.

At this point, you probably think your machine will slow to a crawl the first time you try any of this.

We thought about that, too. So new Windows 3.0 breaks the 640K memory barrier that saddles other DOS programs. Giving you access to all the memory and power your 286 or 386 PC can muster.

It all sounds incredible. Which it is. And, it's taking place in an intuitive, consistent graphical environment.

For more information or to learn about upgrading your current Windows version, call (800) 323-3577, Dept. L84.

Graphics-based software is how people will run their PCs in the 1990s.

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Microsoft Windows 3.0 is optimized for 1-2MB 286 and 386 personal computers. 640K RAM required. Customers inside the 50 United States, call (800) 323-3577, Dept. L84. In Canada, call (416) 673-7638. Outside the U.S. and Canada, call (206) 882-8661.
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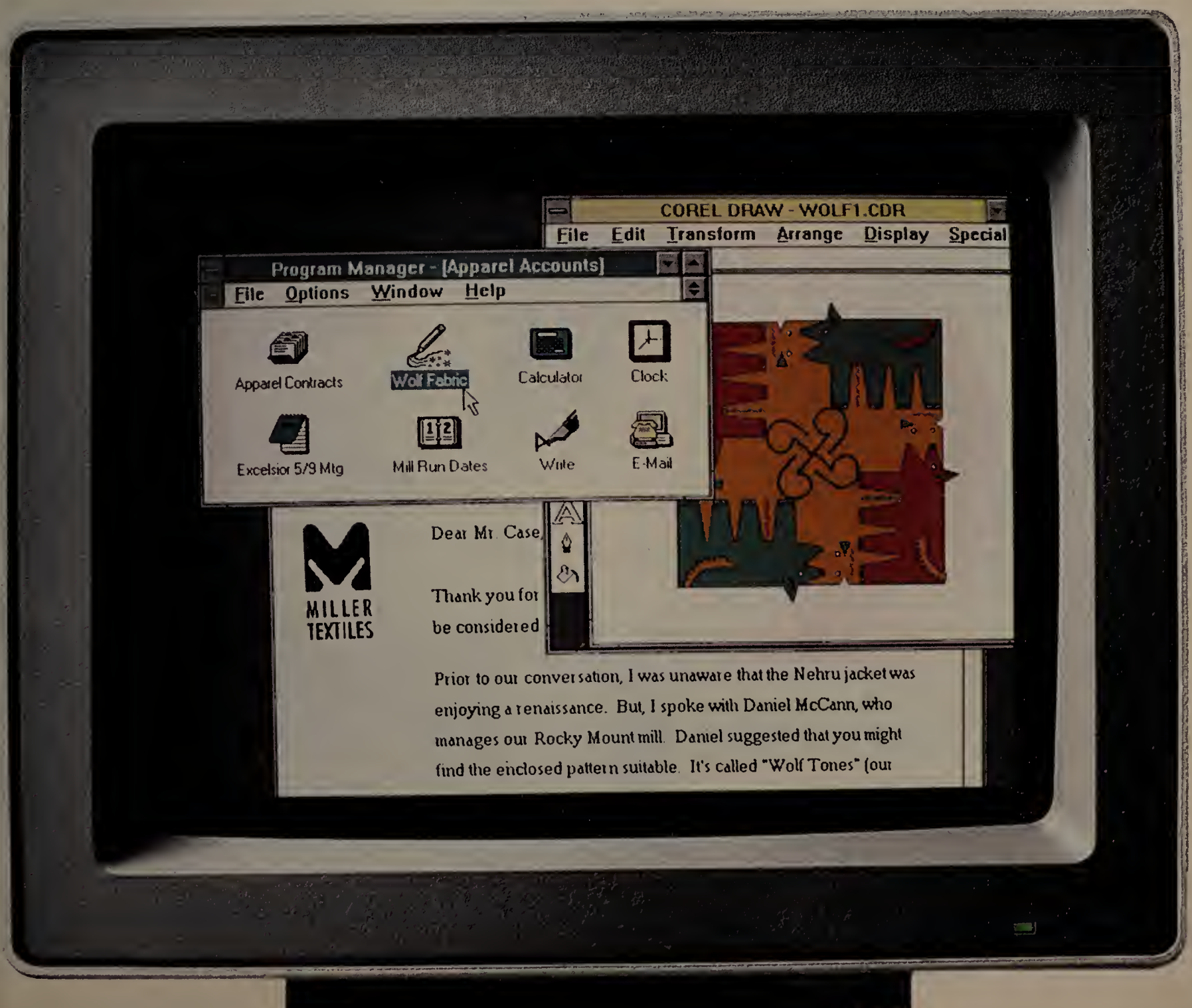
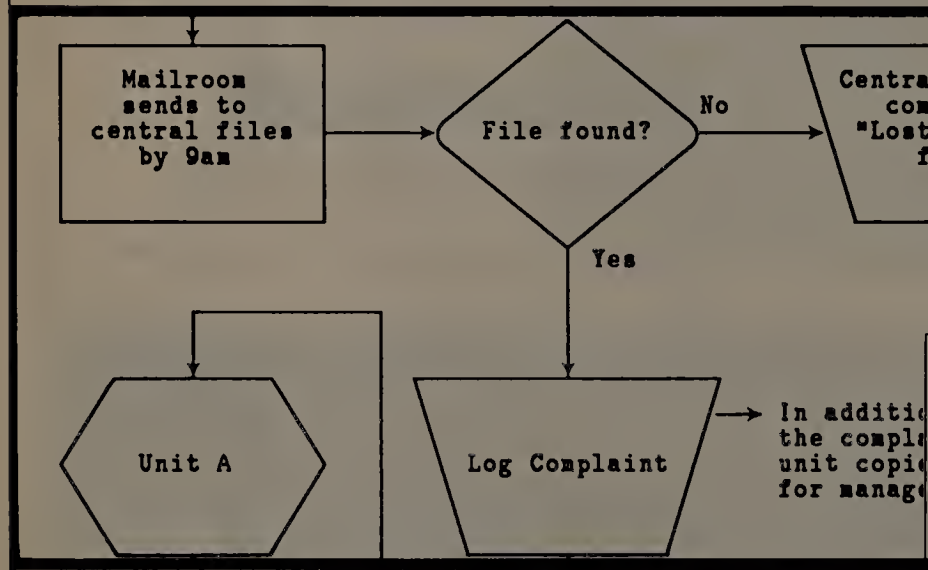


EasyFlow

An on-screen chart processor that knows about charts and diagrams, not just another "screen-draw" program that makes you do most of the work. **EasyFlow** is a powerful full-screen graphics program dedicated to data-flow diagrams, flow charts and organization charts. With it you can quickly compose diagrams. More important, you can easily modify them so they are always up to date.



This chart fragment was produced on an H P LaserJet Plus and is actual size and unretouched.

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Research provided by PC World *assistant editor Susan Lusty.*

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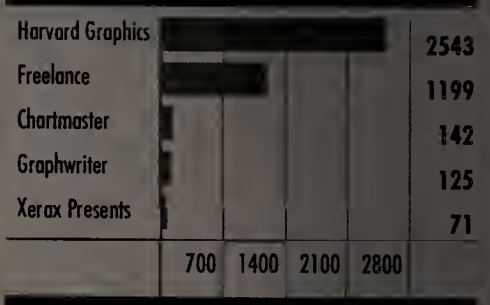
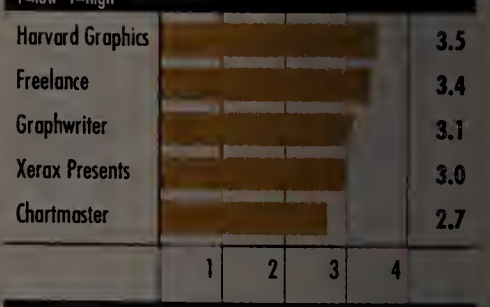
RATE YOUR SATISFACTION: Presentation Graphics Software

In the fast-moving world of presentation graphics, Software Publishing Corporation's *Harvard Graphics* and Lotus Development's *Freelance* are by far the most popular packages, according to this survey. As the two longtime leaders in this field, they boast over ten times the installed base of some of their competitors. Not surprisingly, given their large installed base, both packages also rate highest in user satisfaction.

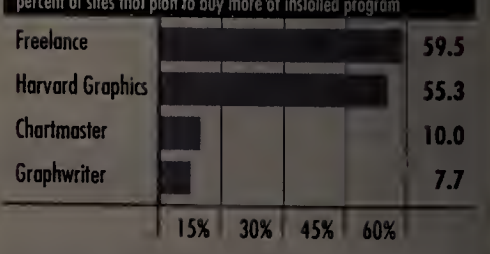
Installed base at survey sites



Users rate their satisfaction
1=low 4=high



Buying plans
percent of sites that plan to buy more of installed program



Source: International Data Corporation. From a survey conducted during the fourth quarter of 1989 of 200 large organizations, each with at least 50 PCs.

Circle 79 on reader service card

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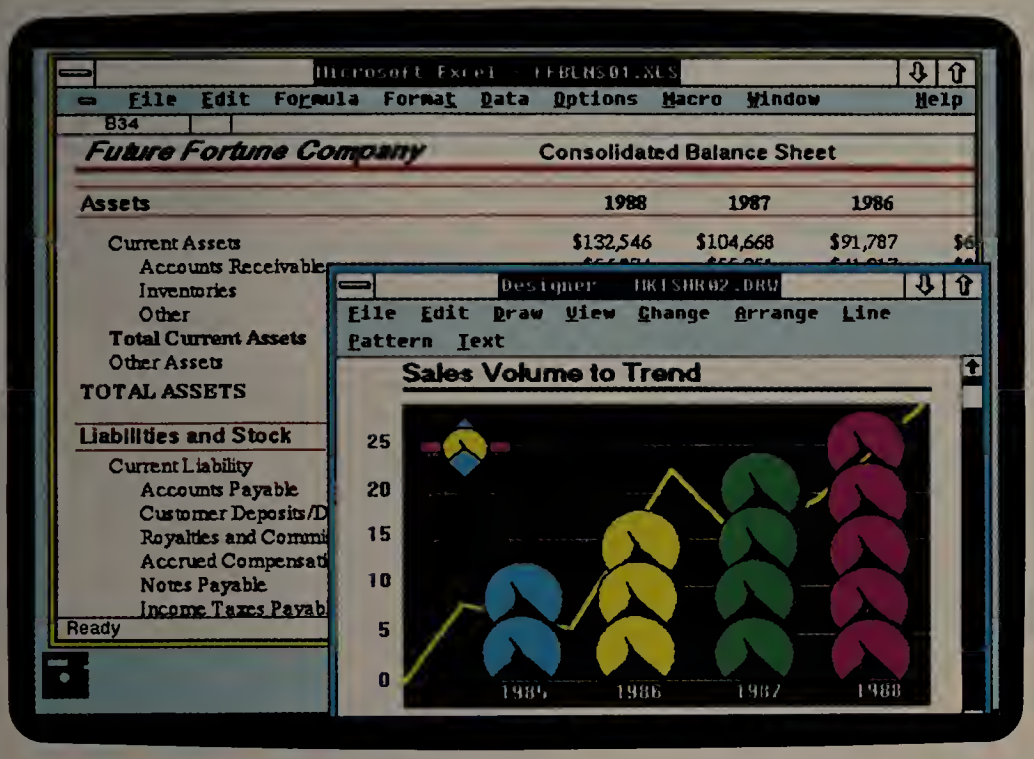

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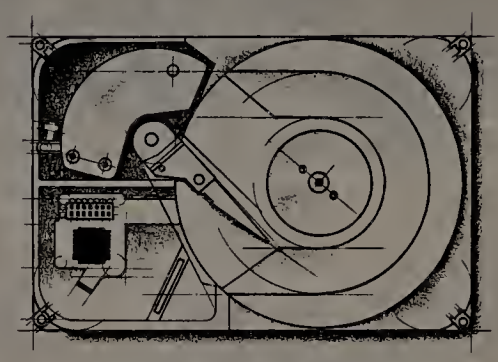

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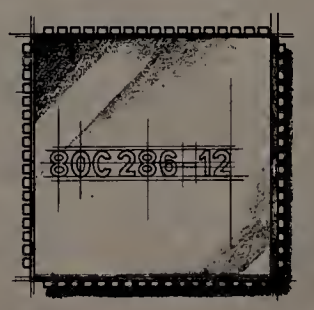

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Edited by ERIC BENDER

NetWare Losing Corporate Developers?

Lotus, Novell Plan Merger

Analysts Question Product Synergy

Lotus Development's sudden purchase of Novell is a watershed for the software industry. But many analysts see the proposed merger as far from a perfect match.

In July the spreadsheet king plans to swap stock now worth $1.5 billion for the network software leader. The firms will operate independently. "It would be ludicrous to change things, since both companies are doing so well," says Lotus chairman Jim Manzi. But they'll cooperate on building and marketing distributed applications that connect PCs and other computers. Add a strategic alliance with WordPerfect Corporation on OS/2 packages, and "we're in a position to guide the industry," says Novell chairman Ray Noorda.

The deal not only gives Novell access to Lotus's loyal corporate accounts, but promises to lend stability to a firm that has frequently reshuffled executives below the 66-year-old chairman. "Novell is no longer just this lonesome company sitting in Provo, Utah; it's now part of a major computing concern," says David Vinzant, president of reseller Vinzant Inc. in Portage, Indiana.

For Lotus, the purchase gets the attention of Novell's high-end resellers and should boost Lotus to around $1.1 billion in sales this year, near Microsoft's current $1.2 billion level. But Microsoft is growing faster, and with its operating systems and other products, "Microsoft has a much more complete strategy," cautions Amy Wohl of Wohl Associates in Bala-Cynwyd, Pennsylvania.

Customers shouldn't expect instant benefits from the merger. "Novell has been extremely slow to finish the features in NetWare, and Lotus won't speed up that process," Wohl points out. There's no quick fix for technical support, another key Novell challenge. The move also increases industry polarization and worries other vendors. "It makes companies that were working closely with Novell think twice," says a Borland spokesperson.

Merging Novell and Lotus, Ray Noorda and Jim Manzi believe they're "in a position to guide the industry."

Because their primary development thrusts have never been parallel, Lotus and Novell lag behind Microsoft in creating a unified network product strategy. Lotus's emerging centerpiece is an OS/2 application suite married to *SQL Server* for OS/2. But while NetWare has added OS/2 hooks and will be bolstering *SQL Server* support, it's not focused on OS/2—let alone built around it like Microsoft's *LAN Manager* and IBM's *LAN Server.*

Moreover, "NetWare is not designed as a platform for a data base server," declares Chicago data base consultant Rich Finkelstein. "There have been a lot of announcements about making it a true data base platform, but there's nothing shipping yet ...because it doesn't have the resources you need."

Partly because of such technical concerns but more because IBM and other big names back *LAN Manager,* "Microsoft seems to be winning the war for the hearts and minds of corporate application developers," says Dave Marshak of Patricia Seybold's Office Computing Group in Boston. In this arena, "Novell is trying to turn things around."

Financially, no turnaround is needed. In the quarter ended January 27, Novell posted $105.9 million in sales, $15.1 million in income. International Data Corporation estimates give it a 52 percent share in net system software.

Mergers rarely go smoothly, and Lotus and Novell run risks on two fronts: Their corporate cultures vary dramatically, and they're more than 2000 miles apart. But the ultimate outcome will depend on product issues. "Lotus and Novell are both very successful; it's not unreasonable that they'll be successful together," says Dave Williams, director of product planning at net rival Banyan Systems in Westborough, Massachusetts. "It all depends on the product synergy." —*E. B.*

PC Software Giants Face Off

	1989 sales/ income	Applicatians	Network, system, and language saftware
Lotus/ Novell	$985 million/ $121 million [1]	1-2-3, Freelance, Notes, Agenda, data base [2]	NetWore, NetWare SQL
Microsoft	$953 million/ $171 million	Word, Excel, graphics, data base [2]	OS/2 LAN Manager, SQL Server, DOS, Windaws, OS/2, Xenix, BASIC, C, athers

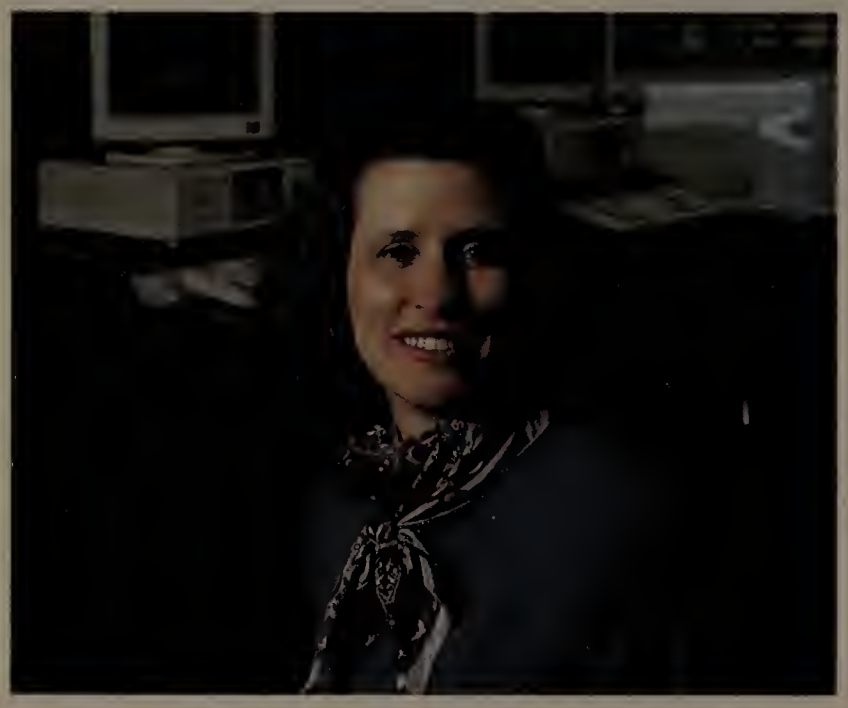
[1] For year ended January 27, 1990. [2] Data base products have not yet been announced.

A bottle laams between Lotus/Navell ond Microsaft in netwark system saftwore and distributed applicotions. However, mare thon holf of Microsoft's soles come from operating systems, longuoges, ond other segments where Latus ond Navell don't campete. Moreover, the firms aften cooperote as well—for instance, upcoming Latus network applicotians will continue ta support OS/2 LAN Monoger.

FRED MERTZ

Compaq, Seeking to Broaden Sales, Pursues Peripheral Opportunities

Add-On Hardware Targets Net, Engineering Niches



Compaq plans to offer peripherals only when other vendors aren't meeting a customer need, says Lorie Strong.

DAVID NANCE

Unlike IBM, Compaq has never been a one-stop shop. But now that it's selling a high-end network adapter and reportedly testing a network laser printer, it seems only a matter of time before the Compaq nameplate will show up on a shopping list of peripherals.

Compaq generally decries one-stop solutions. "We very much support a multivendor strategy, where people pick what's best for them," says Lorie Strong, director of product marketing. Nevertheless, Compaq has often come out with private-label peripherals. Tape drives were early options on Compaq systems, and last year the company began selling a high-end graphics system for CAD users.

The idea, says Strong, is to offer only products that no one else provides. That was the scheme behind last year's Advanced Graphics system, and the DualSpeed Token-Ring Controller presented in April offers a way to make the Systempro's EISA architecture shine in networks. "The two things we're focusing on are CAD/CAE and connectivity," says Strong. In areas where dealer solutions have sold well, such as desktop publishing, no private-label products are planned.

By itself, the Compaq label is no guarantee of success. CAD users haven't been entranced by the Advanced Graphics system, which costs up to 30 percent more than similar name-brand adapter/monitor products from companies like NEC. "If [users] can get away with something less expensive that does the same thing, they'll buy it," remarks one reseller.

But in networks, a line of high-end Compaq peripherals could ease a nagging support issue, says Rick Inatome, chairman of Inacomp Computer Centers in Troy, Michigan. "When you mix and match all kinds of items, you lose the ability to go to a single source with problems," Inatome says. "That's one of the biggest problems resellers have."

Compaq needs to conquer compatibility issues to sell its high-end file servers, says John Murphy of Wohl Associates. And that makes a broad line of Compaq-labeled net peripherals a near necessity, even when identical third-party products exist—as in the case of Compaq's token ring card, which is built by Proteon of Marlborough, Massachusetts. "Users may not know Proteon," points out Murphy, "but they do know Compaq."

That's exactly why a high-end laser printer is a likely product for Compaq, according to Mark Cuban of Dallas systems integrator MicroSolutions. Hewlett-Packard may have the personal printer market in the bag, but Cuban sees a need for a laser tailored to the compatibility-conscious world of nets. "Once Compaq puts its name on it, you can have confidence it will work as planned," says Cuban.

Analysts Marc Boer of BIS CAP International in Norwell, Massachusetts, and Bill Lempesis of Dataquest in San Jose, California, agree that marketing a lightweight portable printer makes more sense than joining a head-to-head wrangle with Hewlett-Packard. Despite the speculation, though, Compaq's Strong insists that no printer is imminent.

How about a low-end, possibly diskless, PC workstation for connecting to the Systempro? "That's one of the most requested items," acknowledges Strong.

Although Dataquest projects Compaq unit shipments to hit 863,000 this year, up strongly from 660,000 last year, growth in industrywide PC sales is slowing, and Compaq clearly is reaching out for growth elsewhere. Its $2.9 billion in 1989 sales ranked it 157th on the Fortune 500. "They're at a point where you start to look for revenues from other types of things," says Lempesis. "When you've got buyers, you might as well make some margin on them."

—Mark Henricks

Solid Profits in Software

Both soles ond profits were extremely heolthy omong the top ten public U.S. developers of personal computer softwore (olthough one of them, Ashton-Tote, hod o rough yeor). Trouble in the distribution chonnel may begin to erode these profits, os computer deolers living on poperthin profit margins will osk softwore vendors to pick up more of the tob for morketing efforts.

GORDON STUDER

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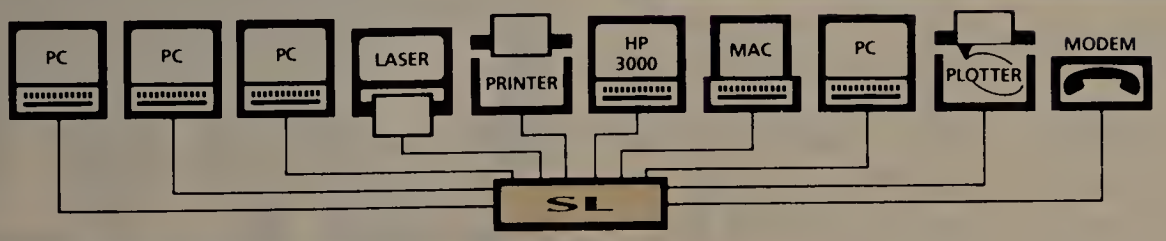

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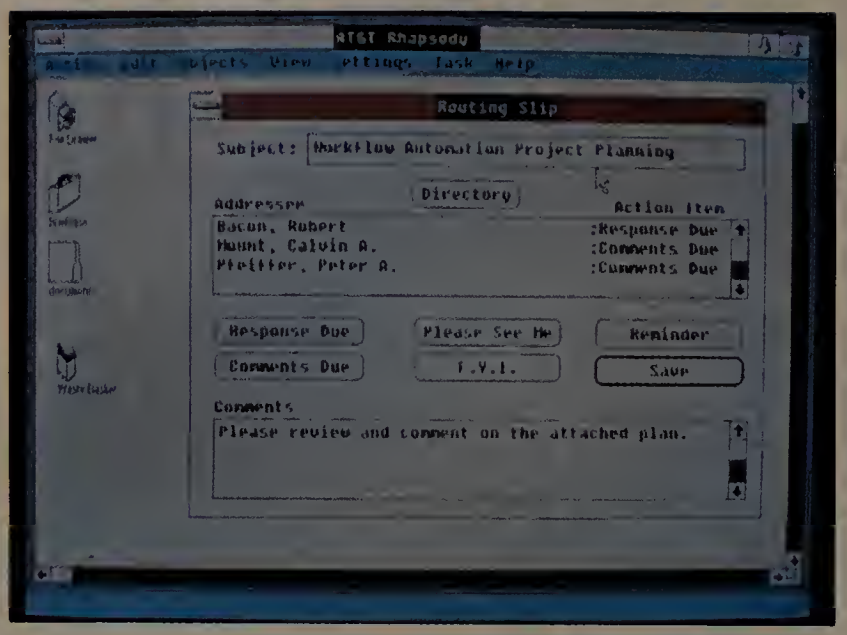


Rhapsody has the look of NewWave but adds Task Manager and other work-flow automation tools.

AT&T Pushes Office Software

Rhapsody Based on HP's NewWave

This fall AT&T Computer Systems will launch *Rhapsody,* a next-generation office environment that reflects AT&T's stance as a soup-to-nuts integrator of open-standard computer products. The PC network–based suite directly challenges IBM's *OfficeVision* and strategic offerings from AT&T's other largest rivals—even though one competitor, Hewlett-Packard, provides *Rhapsody*'s underlying technology.

Rhapsody is a client/server product based on *NewWave* (the object-oriented HP environment whose PC front end is built on *Windows*). *Rhapsody* users get *NewWave*'s hot links among applications and its "agent" facility, which AT&T has renamed the "baton" in keeping with its theme of business orchestration. AT&T has also created a shell that will let any DOS application take advantage of drag-and-drop features for printing, faxing, or copying files.

AT&T's move is a big boost for *NewWave* and the concept of graphical office environments (see "Windows on the Corporation," May 1990). Bill Nelson, marketing director for AT&T Computer Systems in Morristown, New Jersey, says the company chose *NewWave* for the front end because it will be offered for *Windows,* OS/2, and UNIX. (Under OS/2, the interface will be Presentation Manager; for UNIX, AT&T will offer both Open Look and Motif versions.) "We wanted to provide a consistent way of doing things across all platforms," says Nelson.

Rhapsody's back-end server portion is based upon the AT&T implementation of *LAN Manager* for UNIX. Although AT&T hasn't ruled out an OS/2 server version, its focus for the near term is strictly UNIX. "We're a UNIX company," Nelson explains. A 20-user *Rhapsody* system, including a 33-MHz 386-based server, will cost about $8500 per user. The software alone will sell for $1900 to $2200 per user. Minimum PC requirements are a 286, a 40MB hard disk, and 4MB of RAM.

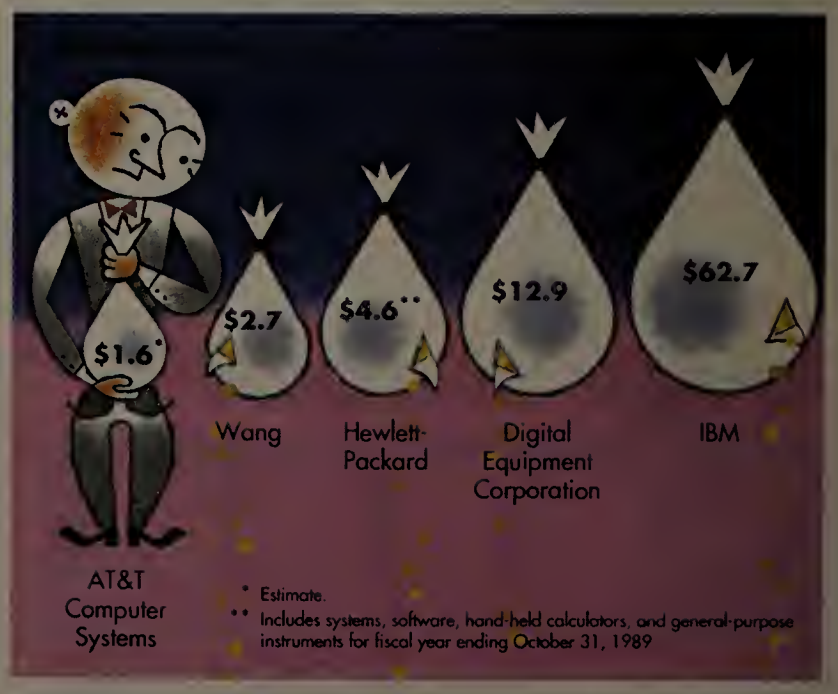
Rhapsody includes a network-based work-flow system derived from technology developed by Workhorse Systems of England. Using tools included with *Rhapsody,* customers will be able to automate and track processes across departments and locations. *Rhapsody* includes two services based on the Workhorse technology. The Meeting Manager does everything from schedule a facility to send out meeting minutes to attendees. The Task Manager lets users assign and track projects of subordinates and co-workers. Integral to the entire system is an AT&T UNIX server–based electronic mail system.

Nelson hopes work-flow automation will differentiate AT&T from its competitors. "AT&T did a good job of coming out with something new," says Michael Howard, president of Infonetics Research Institute in San Jose, California. He calls the work-flow automation offering "the first of a new genre that will become an essential part of office automation."

Most analysts agree that *Rhapsody*'s features are competitive but add that AT&T will have trouble selling it—a doubt underlined by AT&T's inability to disclose a single *Rhapsody* customer. AT&T "doesn't have any installed base in office systems," says Judith Hurwitz, an analyst with Patricia Seybold's Office Computing Group in Boston. Moreover, customers tend to make conservative buying decisions on office systems—which must be threaded throughout an entire business and become a part of every employee's workday.

Overall, says Dataquest analyst Rikki Kirzner, AT&T's strongest selling point is the extra services it provides. As part of its swing toward systems integration, the company will offer everything from consultation services to maintenance and management of a customer's networks. For *Rhapsody,* AT&T will even resell and fully support a select few PC applications. Kirzner says that AT&T's reputation will serve it well: "When you talk about the exchange of information, you're talking about networks and telephones, and [that means] AT&T." —*Roberta Furger*

AT&T: Slow Sell in Offices



After only six years in the computer business, AT&T will find it difficult to challenge IBM and the other suppliers who rule the office automation turf.

PHIL ANDERSON

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Prodigy Plows Ahead

Message Censorship Riles Users

Prodigy brings on-line shopping, stock information, games, and other services to the Arends family.

As videotex services go, Prodigy is radical. Its flashy graphic user interface is so simple, a 5-year-old could run it. The service bills a flat $9.95 a month for unlimited access. And Prodigy downplays some traditional functions such as messaging, censors user transmissions in a particularly heavy-handed way, and won't download files at all.

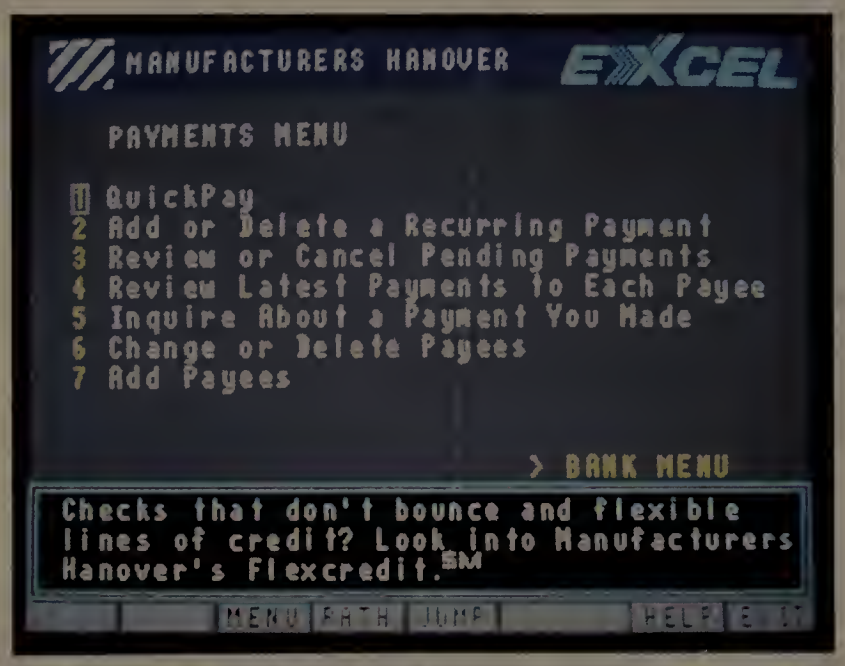
Why? Unlike videotex pioneers such as CompuServe, Prodigy bills itself as a "transactional service," emphasizing home banking and shopping. Colorful weather maps, free stock quotes, and a *USA Today*–like information mix are combined with on-line ads, creating a cross between a suburban shoppers' newspaper and a video game.

Prodigy aims at casual home users like the Arends family in Eden Prairie, Minnesota. Sharon Arends, a school curriculum resource assistant, shops on line. Her husband, Michael, a manager at an electronics firm, tracks stocks and watches the weather. Their children, ages 10 and 14, play games, send E-mail to friends, and access educational offerings such as the on-line *Weekly Reader*.

"If the information it provides meets your needs, it's *really* a bargain," says Bill Smail, an Atlanta systems analyst. He calls for stock quotes and access to Sylvia Porter and Brendan Boyd columns. Clem Contardo, a microcomputer manager in Newark, New Jersey, who also receives stock quotes, likes Prodigy's graphic interface but notes that dealing with it is slow even on his 386-based PS/2.

Since forming an alliance six years ago, IBM and Sears have poured more than $600 million into Prodigy, analysts say. Some see the White Plains, New York, service as a courageous experiment, others as a boondoggle. "My crystal ball is cloudy," says Margaret Fischer, vice president at Link Resources Corporation in New York City. Link's most optimistic figures show break-even by the late 1990s.

Gary Arlen, editor of *Interactivity Report* in Bethesda, Maryland, says that Prodigy may take five years or more to start recouping its investment but is capturing the base it seeks. "It has targeted people who are not computer types but have a computer at home, and I've been finding more and more people who just *love* Prodigy."



PETER BECK

The unusual interface aims to ease Prodigy's path toward home banking and other on-line transactions.

Rival on-line services agree that Prodigy takes a new slant. "Our strongest products include communications such as electronic mail and special interest forums," says David Kishler, supervisor of corporate communications at CompuServe in Columbus, Ohio. "That's a different approach than Prodigy is taking." Neil Harris, market development manager for GEnie Information Services in Rockville, Maryland, remarks that Prodigy is an excellent service for novices, but users shop around once they discover its limitations.

Joshua Harris, president of Jupiter Communications, a New York videotex consulting firm, maintains that Prodigy's products and responsiveness to its customers are compromised because it has become a "giant IBM-like bureaucracy with over 1100 employees." He cites as an example Prodigy's practice of scrupulously censoring messages on all its bulletin boards—despite loud protests from subscribers.

Tom Coleman, a Houston, Texas, freelance writer, experienced the knife of Prodigy censors after trying to post a complaint about a *Batman* commercial that he received in his private E-mail box. Prodigy returned the message with a form letter explaining vaguely that it did not adhere to guidelines. Other users protest about messages being erased for references to evolution, UFOs, Prodigy shortcomings, or astrology.

Henry Heilbrunn, vice president of product development at Prodigy, responds that only a tiny percentage of messages are rejected, usually because they stray from the topic. "Our members are busy people; they're looking to get information quickly, so they're looking at electronic services such as ours to help them do the sorting," he says.

To date, Prodigy's mass mailings, which give away software and a month of connect time, have placed it in 350,000 homes. But executives won't comment on when they expect profits—or on almost any other topic. —*Judy Getts* ●

TWO-FISTED MANAGEMENT

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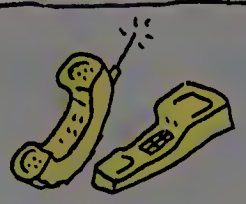

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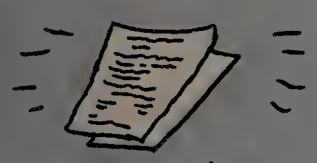

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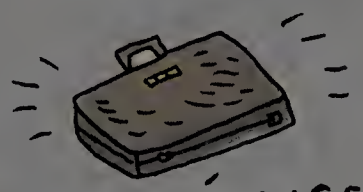

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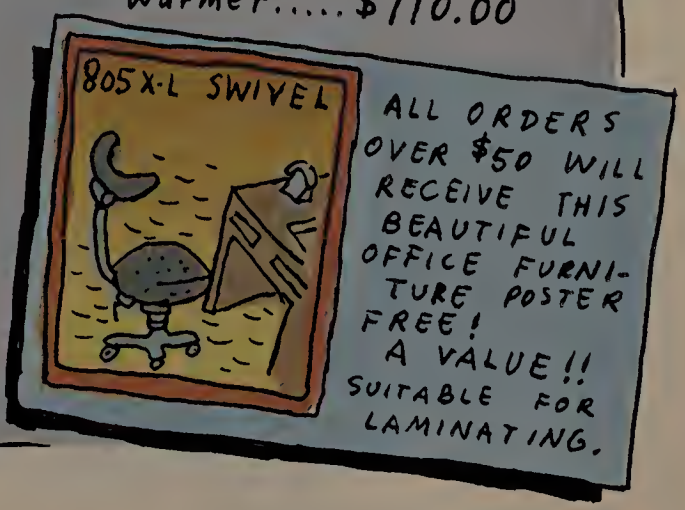

MARK MAREK

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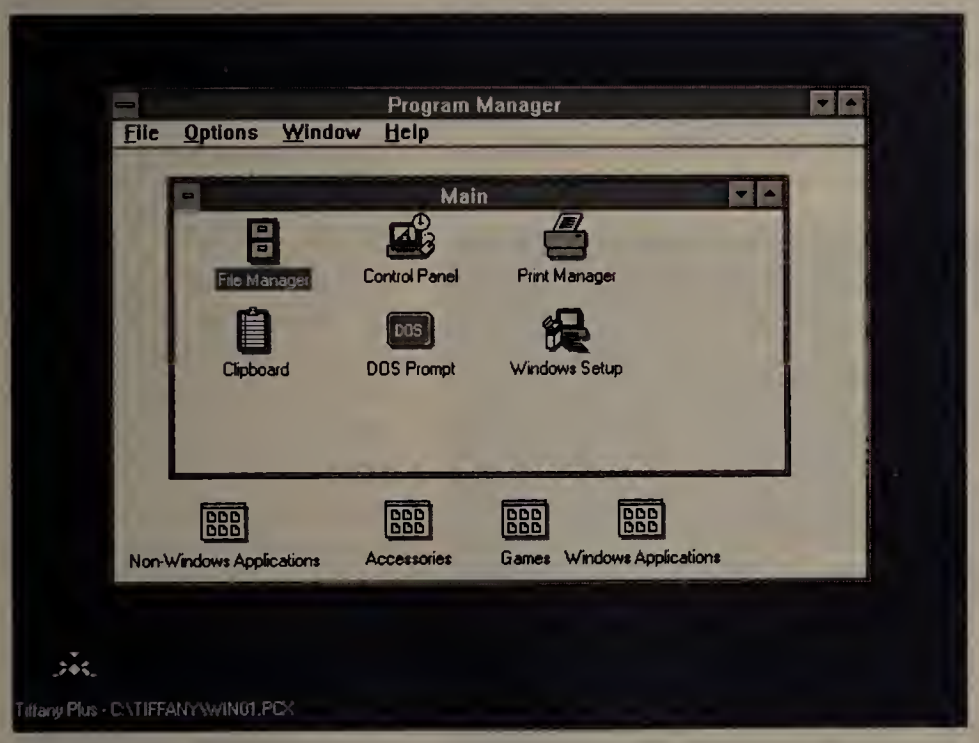
Windows Makes the Grade

Will Windows 3.0 be fast, facile, and friendly enough to earn a place on your PC? The answer is yes—with a few reservations.



The new Windows greets you with an icon-run interface. You can access environment-wide tools like the Clipboard by double-clicking their icons in the Main window. The icons at the bottom of the screen open windows that display work groups for Windows programs, DOS programs, and so on. Users can add custom work groups as well.

Robert Luhn

The elephant can finally tap-dance. After years of promises—of faster performance, of a flexible Macintosh-like interface, of easier setup and reconfiguration—*Windows* has finally made good. Based on the prerelease version examined here, it's clear that Microsoft has listened to its customers—and checked out third-party *Windows* add-ons.

The biggest news is that *Windows 3.0* will be *fast*—apparently fast enough to make it a usable environment on 12-MHz and speedier 80286s. Also, you will never again need to deal with sluggish expanded memory. *Windows 3.0* can tap the "protected" mode of 286, 386, and 486 microprocessors, enabling it to use 640K of conventional and 15MB of extended memory. As a result, you can run more *Windows* and DOS applications at once and work with bigger data files.

And 386 users get even more. With at least 1MB of extended RAM, *Windows 3.0* can call on a virtual memory scheme that uses the PC's hard disk just like RAM to effectively quadruple the amount of memory available to *Windows* (up to 16MB). Of course the more memory you have, the more powerful *Windows* is.

PC World previews are informol assessments of products that ot press time were still in the develoopment stoge. Complete reviews —including feotures evoluotions ond performonce testing—will oppeor only ofter o product is officiolly releosed.

More Than Windows Dressing

Perhaps just as important, Microsoft has finally banished the MS-DOS Executive and replaced it with a customizable, icon-driven interface that resembles the OS/2 Presentation Manager. Load *Windows 3.0,* and you're greeted by a customizable desktop with icons of key *Windows* tools, plus icons representing groups of *Windows* applications, utilities, accessories, and games, plus non-*Windows* applications.

The most important new utility is the File Manager. Double-click the little file cabinet icon in the Program Manager's Main Group, and up pops a subdirectory tree with disk drive icons and miniature folders representing subdirectories. Click a folder, and file icons (differentiated according to the file's purpose) pour onto the screen. *Windows 3.0* lets you execute a program by double-clicking its icon or name. In the File Manager only, you can start an application by double-clicking on an associated data file or by simply dropping a data file's icon on a program icon. You can similarly copy or move files and entire subdirectories just by dragging them from one place on the tree to another.

Unfortunately, since important tools like the File Manager run in separate overlapping

SNAPSHOT

Windows 3.0

Microsaft's aperoting environment may finolly be ready for prime time. It's fast, it sparts a Mac-like iconic interfoce, and it's packed full af new and improved utilities.

KEY FEATURES

- **Runs faster**
- **Taps up to 16MB of memory**
- **Icon-driven interface, OS/2-like file manager**
- **Automatic virtual memory scheme**
- **Automatic setup program**
- **On-line help and enhanced desktop tools**

AVAILABILITY

May 1990

PRICING

$149, $50 upgrode far registered users of all *Windows* versians

Microsoft Corp.
One Micrasoft Woy
Redmand, WA
98052-6399
800/323-3577,
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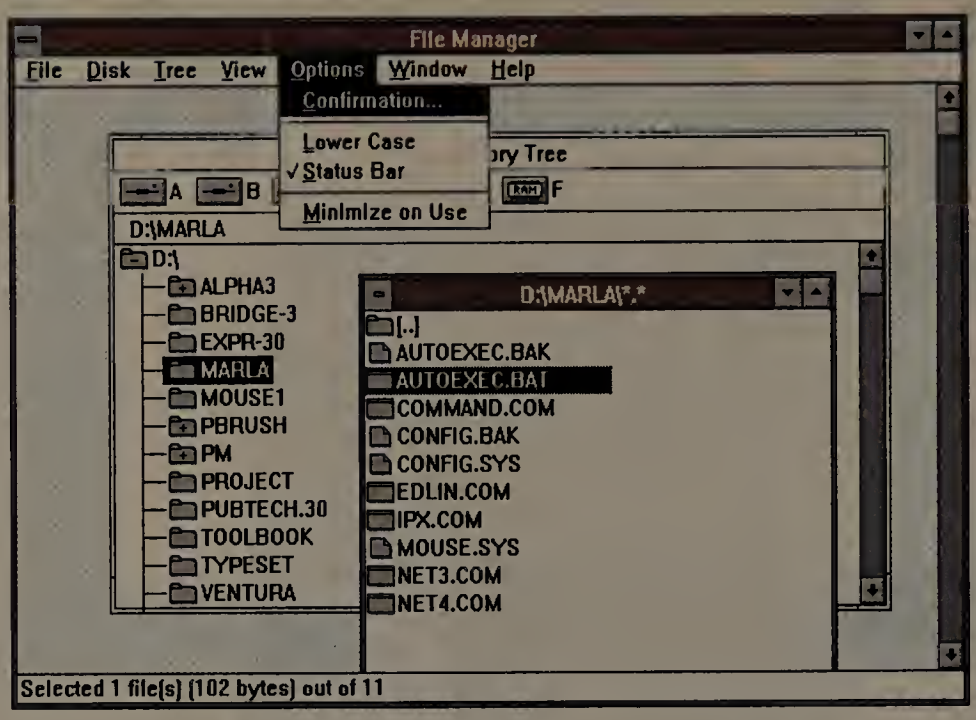
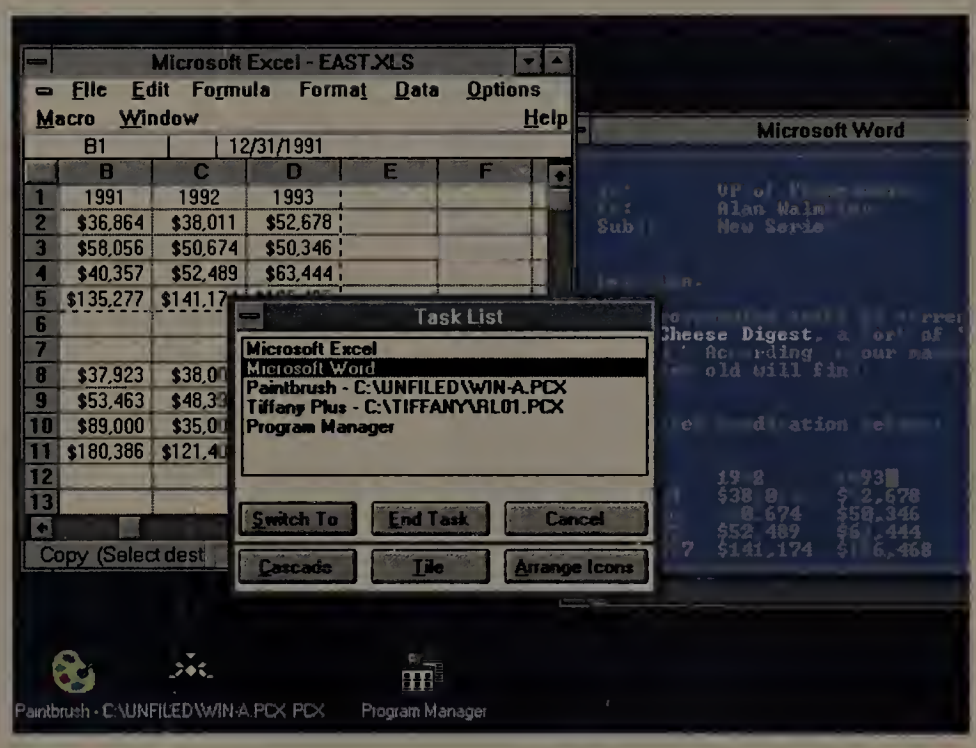


Windows' File Manager is a cross between Xtree and the Macintosh's file system. Subdirectories are represented by folders, and file icons are shaped according to function. You can copy files or directories just by dragging their icons to a new destination, and load programs by double-clicking them.



Windows 3.0 easily runs multiple DOS and Windows applications at the same time and lets you move data between them. With all those windows open at once, you can quickly get lost. Luckily, the pop-up Task List lets you jump to another current program with a few clicks.

windows, the screen can get cluttered pretty fast. Microsoft's answer is the Task List, a neat little pop-up box that lists every active program. With two clicks you can bring a program to the top of the stack, close its window, or cascade all application windows down the screen for easy picking. A better solution would be to integrate the Program Manager, File Manager, and Task List—something you may not see until the era of *Windows 4.0*.

On the plus side, the new *Windows 3.0* desktop is relatively malleable. With a menu command or two, you can create a custom application-group window, drag any program and data files into it, and store it on the desktop as an icon; pick system colors from a 256-color palette, along with background patterns; or simply straighten up a desktop littered with windows and icons. However, when you quit *Windows 3.0,* it won't remember which application windows were open on the desktop and restore them for your next session—a trick Microsoft should have learned from Publishing Technologies' *Pubtech File Manager.*

The Macro Recorder in *Windows 3.0* saves and replays keystrokes and mouse movements and clicks so you can automate repetitive tasks. Unfortunately, if you record mouse activity in a window of one size and play back the macro when the window is a different size or elsewhere on the screen, you'll experience unintended results. Macros aren't editable, and they can't automatically launch applications when you start *Windows.* Softbridge Ltd., which developed the Macro Recorder for Microsoft, offers the far more powerful *Bridge 386,* which will probably turn out to be a must for serious macro users.

However, other new *Windows* accessories rate much better. Need to whip up an illustration or edit a scanned image? Forget the old black-and-white *Windows Paint—Windows Paintbrush* from Z-Soft not only taps *Windows'* big color palette but offers a decent collection of image manipulation features from skewing to flood/fill. Need to just unwind? A solitaire game similar to the Mac's *Klondike* will keep you glued to your PC.

Most of the traditional *Windows* tools have been strengthened, too. For example, the Terminal has become a capable, if simple, communications program; the Calculator now features a scientific mode; the Clipboard now holds huge images, including print screens, and can save data in a special CLP file. Two other gripes have also been addressed: *Windows* finally includes on-line help, and you can now quickly connect to network servers and printers and even view, reorder, and delete print jobs in a network queue. Additionally, *Windows 3.0* not only throws in a few more system fonts, it supports the LaserJet III's Intellifont scaling technology.

In short, *Windows'* aim is to be an all-in-one environment—and it more or less succeeds. If you're already working with *Excel, Ami,* or *PageMaker, Windows 3.0* will keep you from exiting to DOS. If you aren't, it just may lure you into the fold.

Working With Windows

Although installing *Windows* has always been a simple menu-driven affair, *Windows 3.0* makes it even simpler. For starters, you don't have to fuss with 286 and 386 versions—one package fits all. The install program analyzes your system's CPU, RAM, video, and other hardware and automatically configures *Windows* for

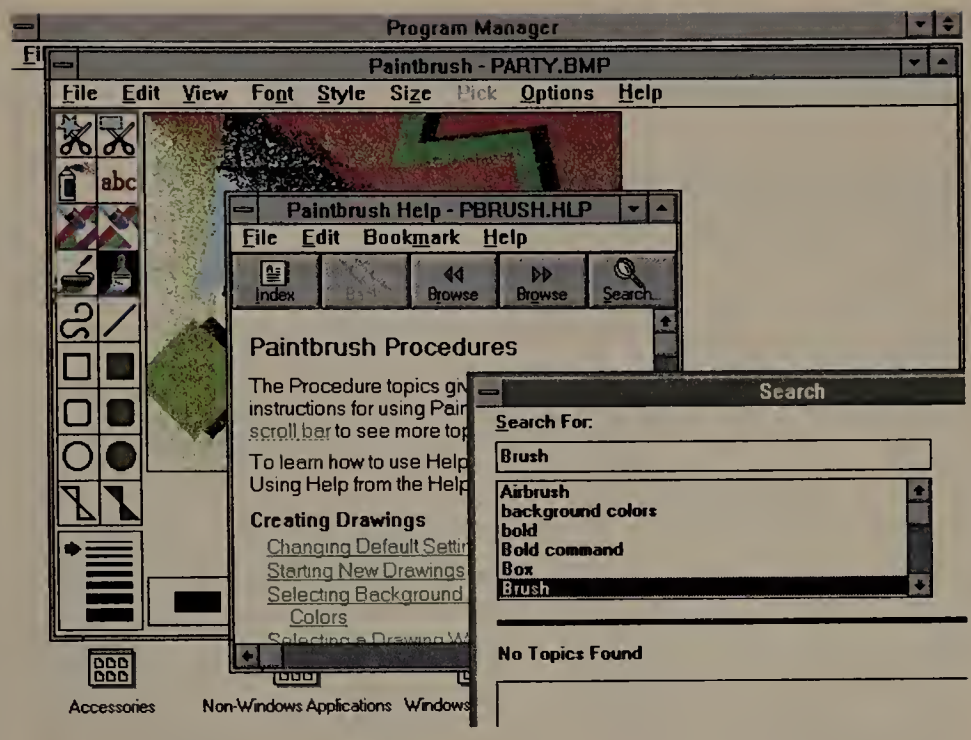
optimal performance. It then lists every program on your hard disk; pick the ones you want to appear on the desktop, and *Windows* does the rest.

On a 286 or better system with 640K of RAM, you get *Windows'* bare-bones Real mode—the environment can run *Windows 2.*xx and *3.*xx applications and exploit expanded memory if that's installed. With at least 256K and less than 1MB of available extended RAM, *Windows* runs in Standard mode: All memory is treated like one big block, which improves performance and allows you to run DOS programs, although you can't multitask them with other applications. *Windows 3.0* flowers in 386-Enhanced mode on a 386 or 486 with 2MB or more of extended RAM. With this setup, you can multitask multiple DOS and *Windows* programs.

Whatever mode you are in, you won't have to reinstall *Windows* to add a new mouse, keyboard, or video adapter to your PC. Merely double-click the Windows Setup icon, and select the new item from mini-pulldown menus in a dialog box.

Windows 3.0 is a breeze to use compared to its predecessor, thanks to *3.0*'s speed and interactive point-and-click approach. You don't have to ponder which EXE or COM file to run—just double-click on the icon in the Program Manager. Want to run a program by clicking its data files? Simply highlight a data file's icon in the File Manager, select the Associate menu option, and supply the name of a program. *Windows'* sharp-looking interface makes things easier too, with its vivid colors, shadowed 3-D buttons, and consistent use of icons throughout.

Once a *Windows* or DOS application is running under *Windows 3.0*, you'll find sizing windows, cutting and pasting,



Windows' on-line help is only semi-context sensitive. It senses which application is running, but you must search through topic lists to find a solution.

and so on pretty much the same, although you'll welcome the dramatic increase in the speed of many operations. *Windows 3.0*–specific applications can take advantage of extended memory and run lickety-split, because they don't have to rely on disk overlays. If memory runs low in Enhanced mode, the virtual memory system automatically kicks in.

If you're multitasking DOS applications under *Windows 3.0*, you're in for more pleasant surprises: You can dictate how much processor time each program gets à la *Desqview*, and if a program normally uses expanded memory, *Windows 3.0* will create it from its pool of extended memory. And though you don't have to use PIF files to run DOS programs, you'll find that PIFs can now control extended and expanded memory use, reserve hot keys, grab specific COM ports for the program, and more. However, setting up a PIF file is just as big a pain as ever.

Thankfully, running old *Windows/286* and *386* applications is painless. Load *Windows 3.0* in Real mode, and it should handle most existing packages with ease. You won't be able to use extended memory or virtual memory, multitask DOS programs, or use the big color palette, but all other resources will be available. In informal tests, *Windows 3.0* managed to run most *2.*xx applications. The good news is that many *Windows* developers will offer *3.0*-specific upgrades within weeks of *Windows 3.0*'s release. Upgrades for some applications should be either free or relatively inexpensive; others, like *PageMaker 4.0*, represent major new releases and will be priced accordingly.

A Shorter Wish List

Although *Windows 3.0* is a big step forward, the interface still needs streamlining. For example, loading two applications and placing them side by side can be a laborious process. And as you load more applications, it's easy for even experienced users to lose a window in the stack. And the inconsistent procedures for moving and copying files make it too easy to accidentally copy an entire subdirectory or misplace an icon.

Other quirks merely annoy. If you're looking for an improved Clipboard, you may be disappointed. Unlike *Desqview*'s, the *Windows 3.0* Clipboard still can't do cumulative copies, and with non-*Windows* applications, it can deal with only one screen's worth of data at a time. Although the user manual is concise and clearly lays out basic operations, the on-line help system is only partially context sensitive. If you're in the print menu, for example, summoning help elicits a list of print-related topics to scroll through—but the system doesn't sense your exact predicament. Independent software developers that create *Windows* add-ons like *Command Post*, *Bridge*, and *Windows Express* will have plenty of opportunities.

Still, *Windows 3.0* looks like a solid deal. Since Microsoft won't be making *Windows* run-times available anymore, it's selling *Windows 3.0* for $50 to registered users of *all* previous versions and run-times. You will of course need a 286 or 386 PC, at least 640K of RAM, and 4MB to 6MB of free disk space (more if you use the virtual memory scheme).

Windows 3.0 doesn't turn the PC into a powerful (and fun) Mac. But the environment is finally mature—and that means your business computing just might be more productive and enjoyable.

Robert Luhn is a senior editor for PC World.

HyperCard Meets Windows

Point-and-click programming for Windows finally arrives—but will ToolBook be the catalyst for thousands of personal programs?

Jeff Walden

Many of us would love to create custom applications such as address books, client-tracking systems, on-line catalogs, or even interactive training programs. Unfortunately, dBASE commands and *1-2-3* macros are far too limited for such jobs, and few of us have the time to learn either Pascal or C.

The solution may be Asymetrix's *ToolBook* for *Windows 3.0*. Like the Macintosh's *HyperCard*, which inspired it, *ToolBook* is an object-oriented *application construction set.* Instead of writing (and rewriting) reams of arcane code to create data entry screens or perform calculations, you build an application by assembling *ToolBook*'s prefab objects—buttons, text and data base fields, scroll bars, and windows, plus built-in data base and math functions.

Like Lincoln Logs, objects can be combined a hundred different ways. First you attach a script (which can be recorded with *ToolBook*'s learn mode or coded manually) to an object. Thereafter, selecting the object runs the script, which may load another program, prompt the user for input, and perform myriad other operations. Since an object and its attributes can be copied, edited, and moved, you can assemble simple applications in short order.

Toolbook lets you add hypertext links to applications.

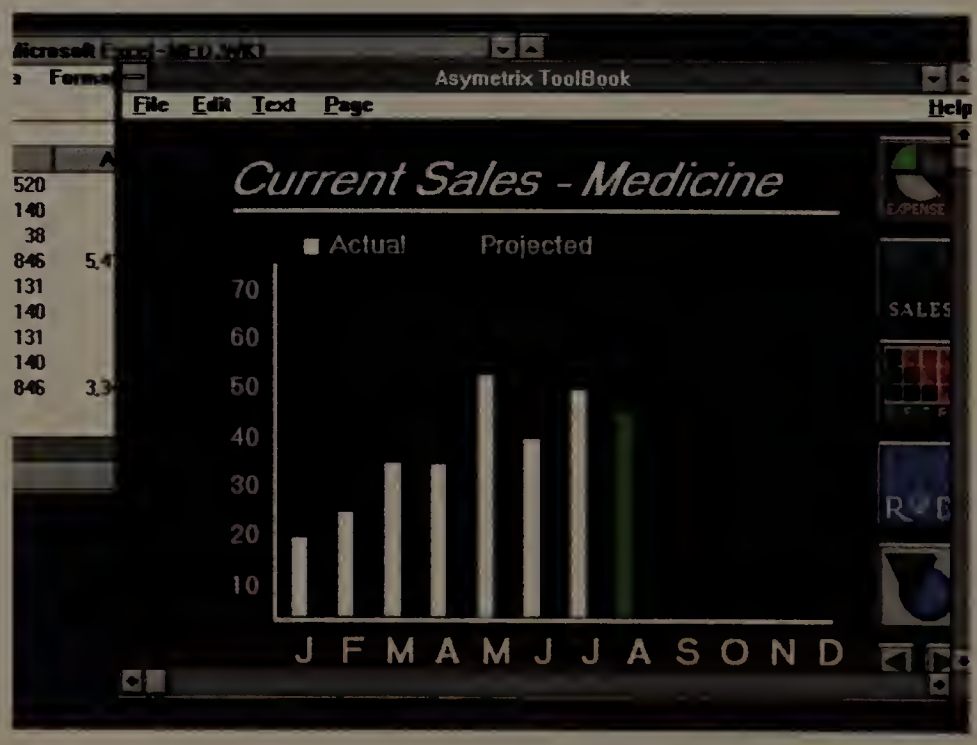
Casual business users will find it easy to create personal Rolodexes and similar applications and even dress them up with simple animation—something they can't do with *HyperCard.*

More important, with *ToolBook* you can easily add hypertext links to your applications: By identifying a string of characters as an object, and assigning that object a script that displays a window of related information, you can incorporate easy-to-use, context-sensitive help for other users of your application.

ToolBook's powerful learn mode lets you simply select a menu option; the package will record commands and mouse movements and generate the appropriate script.

Creating something more complex—a front end for a mainframe application, a computer-based tutorial, or an interactive report that swaps data with *Excel* via *Windows*' Dynamic Data Exchange (DDE)—means writing scripts. Although Asymetrix calls its OpenScript language "English-like," a knowledge of BASIC won't hurt. To help you get started, *ToolBook* will come with a dozen sample applications, ranging from an animation primer to a *dBASE* front end, plus superb on-line help and a top-notch programming manual.

Just remember that *ToolBook* will have two notable drawbacks. The package lacks a built-in paint module, so fine-tuning a page means constantly jumping out to another application to edit bit-mapped images and text. Also, *ToolBook* can't read existing *HyperCard* stacks, cutting users off from thousands of ready-made applications. Upcoming *Windows* and OS/2 *HyperCard* clones will offer this last feature, which may well determine your buying decision.



ToolBook can be a handy "what if" tool. This "book" is hot-linked via DDE to Excel. To see Sales, Expenses, R&D numbers, and more, you merely click the button on the right—an attached script fetches the numbers and graphs them.

SNAPSHOT

ToolBook

This *HyperCard*-inspired "application construction set" for *Windows* 3.0 features object-oriented program development, animation, and a powerful script language.

KEY FEATURES

- **Point-and-click application building**
- **Script recorder that handles animation**
- **Script language as powerful as BASIC**
- **Hypertext capability**
- **Support for Windows' DDE facility**

AVAILABILITY

May

PRICING

$395; run-time price not yet available

Asymetrix Corp.
110 110th Ave. NE #717
Bellevue, WA 98004
800/624-8999 ext. 299H, 206/455-3071 (fax)

Reader service no. 685

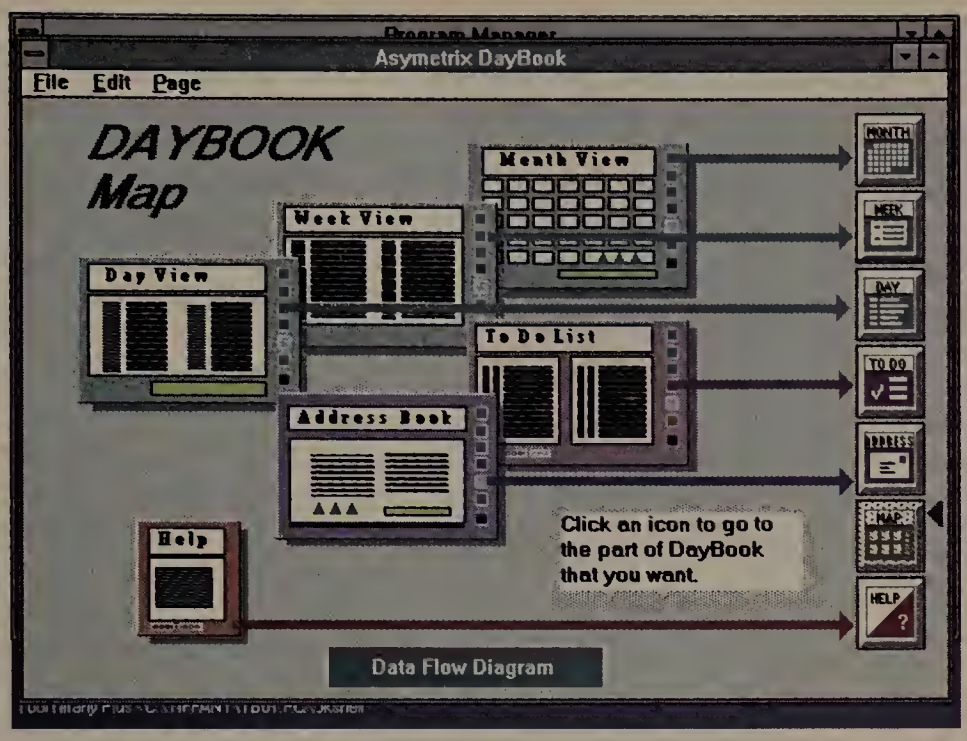
Making Book

ToolBook uses a page-and-book metaphor rather than *HyperCard*'s card and stack, but the principles are the same. Like a book, a *ToolBook* application is made up of

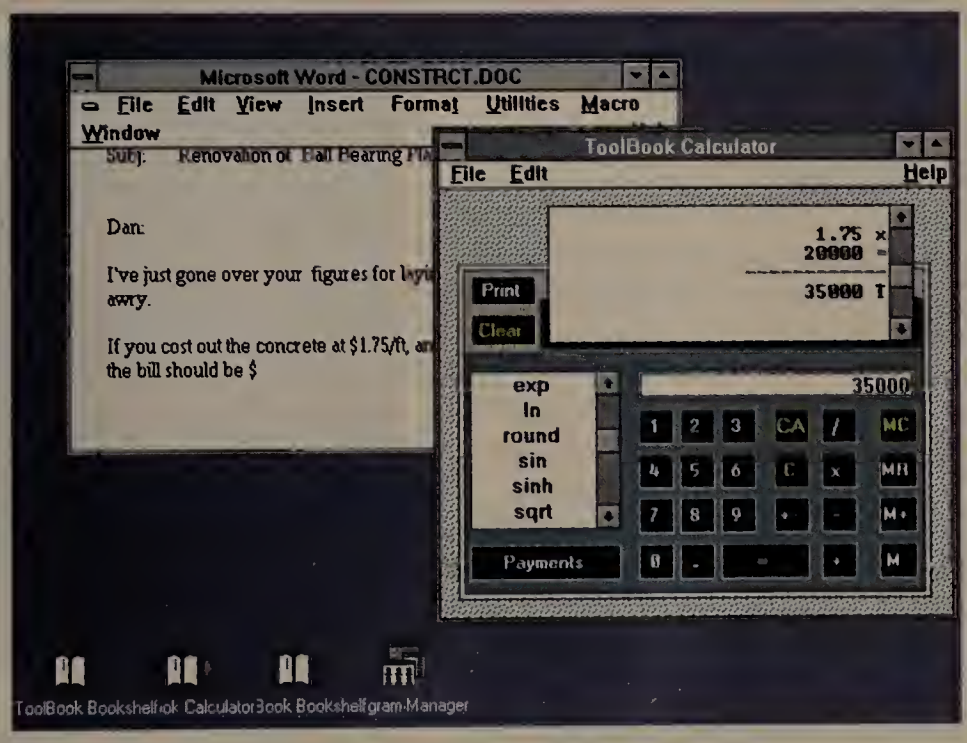
pages that you display one at a time. Each page can hold text, plus such objects as buttons, text objects, scrolling and nonscrolling fields, and graphics. Most of these objects can initiate actions when clicked, or even simply when the mouse pointer moves across them.

Creating a *ToolBook* application is straightforward. You start with the background page, which works like the master frame in *Ventura*—any object you place there will show up on every page of the book. You typically would place next-page and previous-page buttons here, along with any recurring graphics. To place a button on a page, you pick a button type (round, check box, radio, rectangle, or shadowed box) from a list, and it pops onto the page. You then can drag it wherever you want. You also specify what a button does when clicked—either display another page or execute a script. Other objects are added the same way, and you can change their appearance and behavior using various dialog boxes.

Of course, the point-and-click approach takes you only so far. You can create modest data base–type applications such as a contact list or a phone book, or turn a report into an on-line hypertext document by linking certain words to other pages in the book. And that's about it. Add a little scripting, however, and you can create truly powerful applications.



The calendar supplied with ToolBook demonstrates the power of scripts. Here you can click to see the daily or weekly schedule, mail-merge letters from an address book, or set alarms.



ToolBook applications, like this calculator, can be used with any Windows program. And ToolBook comes with everything from round to sine functions.

Beyond Point-and-Click Programming

Scripts come in handy when you want to display a particular page based on certain conditions. For instance, imagine an interactive company handbook in which one set of buttons is labeled for divisions such as "manufacturing" and "sales," and another set for information such as "location" and "personnel." With scripts, you can click the manufacturing and location buttons, and *ToolBook* will assess that combination of choices and determine which page in the book to display—in this case, the page with a map locating the manufacturing facility.

If you want sharp animation, scripting is a must. *ToolBook*'s learn mode records actual screen coordinates, so the resulting script is big and the replay jaggy. For trimmer scripts and smoother motion (plus cinematic effects like pans, wipes, and dissolves), you'll have to write a script.

ToolBook's OpenScript programming language is as powerful as interpreted BASIC but not quite as hard to master. A typical statement, for example, would be "put 10 into the_pot." OpenScript includes more than 400 script commands, messages, settable object properties, and operators. Scripts can load and save files, perform computations, animate graphics, or display various pages. Scripts also let a *ToolBook* application exchange data with any *Windows* program that supports DDE. To make development easier, *ToolBook* comes with an integrated script editor and debugger.

Those who want more power (and can program in C) can attach almost any function to a *ToolBook* application by creating a *Windows* DLL (dynamic link library) feature.

The beauty of the *ToolBook* approach is that once you create a script, you can use it over and over, and you can build a library of objects that perform basic functions. Just remember that like most *HyperCard* work-alikes, *ToolBook* won't generate compiled files. To use *(see HyperCard, p. 80)*

HYPERCARD

(continued from p. 79)

a program, you'll need *Windows 3.0* and either *ToolBook* or a *ToolBook* run-time, which should be available when the package ships.

Quirks and Quandaries

There are some creases in the *ToolBook* page. As noted earlier, *ToolBook* is missing a built-in paint program, so you must import bit maps created elsewhere. Once they're in *ToolBook*, you can't alter their shape or color. That means you have to bounce back and forth between *Windows Paintbrush* and *ToolBook*. Neither *HyperPAD* nor *HyperCard* subjects developers to this hassle.

Fonts present more challenges. *ToolBook* automatically imports ASCII and DBF files, and any font installed for *Windows* can be used in a book. Unfortunately, if you distribute a *ToolBook* application to someone equipped with different fonts, *Windows* will substitute fonts—with unpredictable results. With *HyperCard* you merely attach the necessary fonts to the application, but that's a trick *ToolBook* hasn't learned. *ToolBook* also can't link objects to sounds; with *HyperCard* you can make an application yodel when the next-page button is pressed.

The Right Tool for the Right Price?

ToolBook isn't for the hardware-shy. You'll need at least a 286 with 1.5MB of memory, 2MB to 8MB of free hard disk space, and an EGA display; a 386 needs 2MB of RAM. *ToolBook*'s $395 price is also four times more than the character-based *HyperPAD*'s, its nearest PC competitor.

But getting this level of control over the *Windows* environment is heady stuff, and *ToolBook* should be a great way for experienced PC users and in-house developers to produce powerful applications with relatively little pain. If *ToolBook* fulfills the promise of its prerelease version, don't leave DOS without it.

Jeff Walden is a freelance writer based in Morgan Hill, California.

Windows 3.0 Quiets the Critics—For Now

WordPerfect, Software Publishing, and other former skeptics will provide catalyst applications—but they still insist OS/2 will be the long-term winner.

Roberta Furger

Windows 3.0 "addresses many of the concerns that kept us from committing to Windows," says Frank Ingari, Lotus vice president for spreadsheet products.

RICHARD HOWARD

As *Windows 3.0* appears, developers are rushing to bring out the wide range of products that will finally make *Windows* a major platform. They aren't all happy about it, however.

Windows advocates are uniformly thrilled about the enhancements Microsoft has made, saying the new memory management scheme and improved interface will attract broad ranks of users. "*Windows 3.0* will take the market by storm," declares Paul Grayson, chairman of Micrografx Corporation in Richardson, Texas. "It will be the premier graphics environment in the world."

Even longtime holdouts are starting to sing the *Windows* tune, albeit a touch less enthusiastically. *Windows 3.0* "addresses many of the big concerns that kept us from committing to *Windows*," says Frank Ingari, Lotus's vice president for spreadsheet products. According to Ingari, Lotus will be shipping *1-2-3* version 3.1 during the third quarter. Although it won't be a full-fledged *Windows* application, the upgrade will support the *Windows* memory management scheme, enabling users to run *1-2-3* as a full-screen application under *Windows*. The upgrade will also include the *Impress* spreadsheet publishing technology now available only as an add-in to *1-2-3* version 2.2. Users can also "logically expect a full *1-2-3 Windows* [product] from Lotus," says Ingari. That program will have the functionality of version 3.1 and the interface of *1-2-3/G*, he says. No release dates have been announced as yet, however.

Lotus isn't the only company that's had a change of heart. Other powerhouses that previously focused on OS/2 Presentation Manager development and labeled *Windows* a "crippled environment" now plan to offer *Windows* products. Most notably, WordPerfect and Software Publishing intend to move their best-selling applications to *Windows*.

"Up until even 18 months ago, large accounts said they weren't interested in *Windows*," says Andre Peterson, vice president of marketing for WordPerfect. "But things have changed over the last year....If we decided not to write for *Windows*, we would be giving up a certain part of our market share to Microsoft, and we're not willing to do that."

Peterson says several corporate customers with huge installed bases of 286 computers are turning to *Windows* as a way to extend the life of their systems. "Companies are getting rid of their 8088 and 8086 systems, but they can't cost-justify getting rid of the 286s," he explains.

A *Windows* version of *WordPerfect* will follow the release of the OS/2 product, which is scheduled to ship during the fourth quarter of this

year. Peterson expects to ship the *Windows* version by the second quarter of 1991. Software Publishing Corporation (SPC) has declined to give a date for the release of either a *Windows* or a Presentation Manager version of *Harvard Graphics,* but "the priority is still on PM development," according to Chuck Jepson, vice president and general manager of SPC's corporate products division. It appears that even IBM is entering the *Windows* fold, with customers expecting a *Windows* version of *OfficeVision,* which at present runs only under OS/2 Extended Edition.

"They ought to separate the applications development arm from platform development," says Mahdavi. "It's perceived in the market that Microsoft's applications development group has an advantage over other *Windows* developers. Whether it's true or not, that's the perception."

Others say that Microsoft has given users conflicting signals about the future. "One of the biggest jokes in the industry is Microsoft's tag line, 'Making it all make sense,'" says WordPerfect's Peterson. "They've done more to confuse the user than at any time in history."

Many developers are worried that the rush to Windows will give software superpower Microsoft even more clout.

Microsoft's Conflicting Interests

Many developers, however, worry that the rush to *Windows* will give software superpower Microsoft even more clout. Some, like Software Publishing CEO Fred Gibbons, have accused Microsoft of playing a devious game, encouraging other companies to focus on OS/2 while concentrating its own resources on the *Windows* packages that offer the greatest opportunities in the short term.

"It's wrong to have the whole industry subjugated to the business decisions of one company," says Frank Mahdavi, president of Columbia Software and developer of *Xerox FormBase,* a *Windows* forms processor. Like many other developers, he must work closely with Microsoft's systems group while competing with Microsoft's applications group.

Peterson believes Microsoft and IBM should have paid more attention to user needs four years ago when they were charting OS/2, and planned incremental improvements to DOS as a transition to OS/2.

TOM SMART

Microsoft's strategy has served to make users more confused "than at any time in history," says WordPerfect's Andre Peterson.

"That would have provided a standard migration path and prevented the confusion that exists today."

OS/2: Friend or Foe?

Much of the confusion arises because Microsoft is now pushing two competing graphical environments for the PC. OS/2 Presentation Manager and *Windows* currently look identical at first glance. They both exploit extended memory. The underlying differences are major, but developers and customers still have plenty of cause to debate the roles of the two products.

Greg Kee, director of product management for Softbridge Microsystems in Cambridge, Massachusetts, believes *Windows 3.0* will slow OS/2 acceptance because it "gives people a longer time in which they can play wait-and-see with OS/2."

Others, however, feel that OS/2 won't be mature until the release of version 2.0 in early 1991, and that *Windows 3.0* will merely whet users' appetite for graphical environments. "*Windows* will serve to point out some of the things you get in a real multitasking operating system like OS/2 that you don't get in *Windows,*" says Lotus's Ingari.

"Customers are telling us that *Windows* will be an interim solution on their way to OS/2," SPC's Jepson reports. "There's no question that their long-term direction is OS/2." Even with all the improvements, "at the end of the day, *Windows 3.0* is still DOS."

OS/2 fans also maintain that *Windows* is almost as resource hungry as OS/2 is. "People have been led to believe that *Windows 3.0* will run beautifully on a 286, but I'm not convinced," says Peterson. "To run *Windows* effectively and to do multitasking, you're still going to need a 386

(see Windows, p. 82)

Windows 3.0 Draws Support

Company	Product	Expected delivery
Aldus	PageMaker	secand quarter 1990
Asymetrix	TaolBaak	available naw
Borland Internatianal	Quattra Pra, Paradax	unknawn, unknawn
IBM	OfficeVision	unknawn[1]
Latus Develapment	1-2-3 3.1	third quarter 1990
Micrasaft	Excel	available naw
Samna	Ami Professianal	available now
Saftware Publishing	Harvard Graphics	unknawn
WardPerfect	WordPerfect	secand quarter 1991
Xerax	Ventura Publisher	second quarter 1990

[1] Product unannounced.

Longtime holdouts are adding their applications to the list of nearly 500 promised products.

WINDOWS

(continued from p. 81)

with 2MB to 3MB of memory." With memory prices dropping, he adds, there will be a minimal cost differential between *Windows* and OS/2 systems.

Still, developers of all sizes will write their graphical applications for both environments. There's one ray of hope for leveraging their programming resources: Microsoft aims to build a layer into OS/2 that will let *Windows 3.0* packages run, looking like OS/2 applications and suffering only a slight decrease in speed.

Regardless of the industry hubbub, this is "*Windows'* moment in the sun," says consultant Amy Wohl of Wohl Associates. Nearly 500 *Windows* products have been introduced, including general business applications, utilities, and development tools. Microsoft also is signing a new round of bundling agreements with major computer makers. Zenith, for example, will be preinstalling *Windows 3.0* on all its hard disk–based 286 and 386 systems. In addition, Asymetrix's *ToolBook 1.0* will be installed on all Zenith 386 desktop PCs.

"*Windows* will become an integral, fundamental part of DOS, just as Presentation Manager is of OS/2," says John Meyer, developer of *Ventura Publisher* and a recent *Windows* convert. "With *3.0*, it's no longer a pioneer journey. They've opened up the trail to the West." ●

Roberta Furger is an associate editor for PC World.

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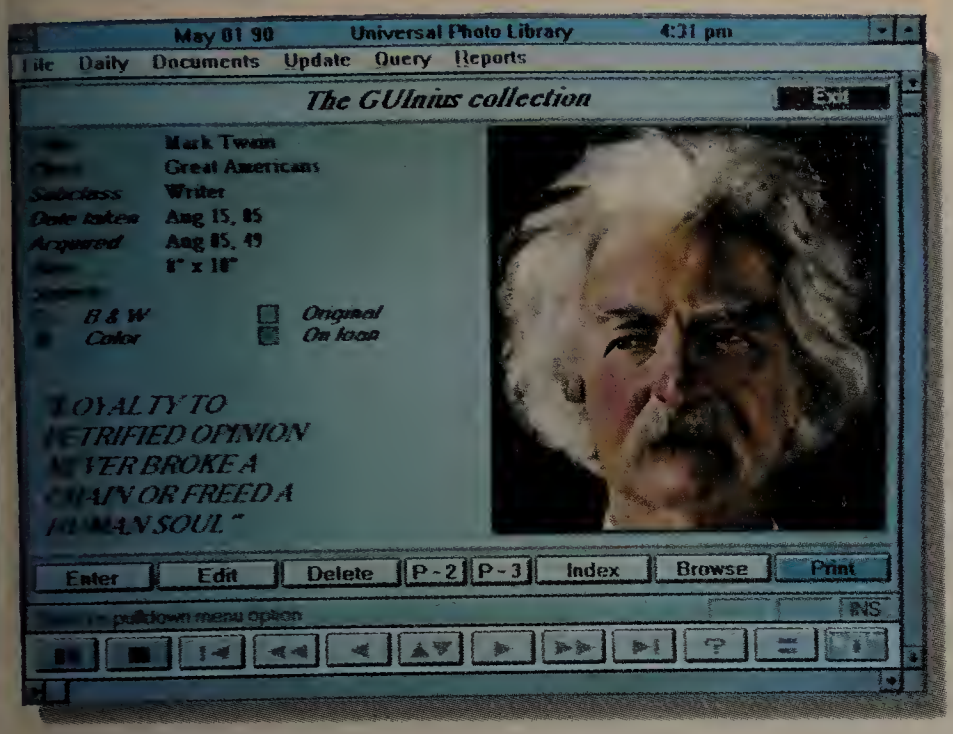

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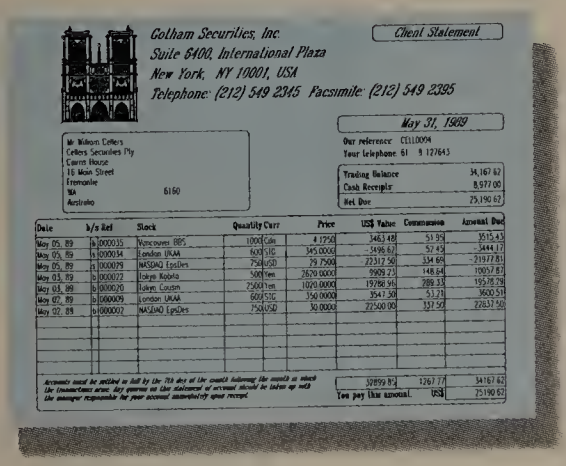

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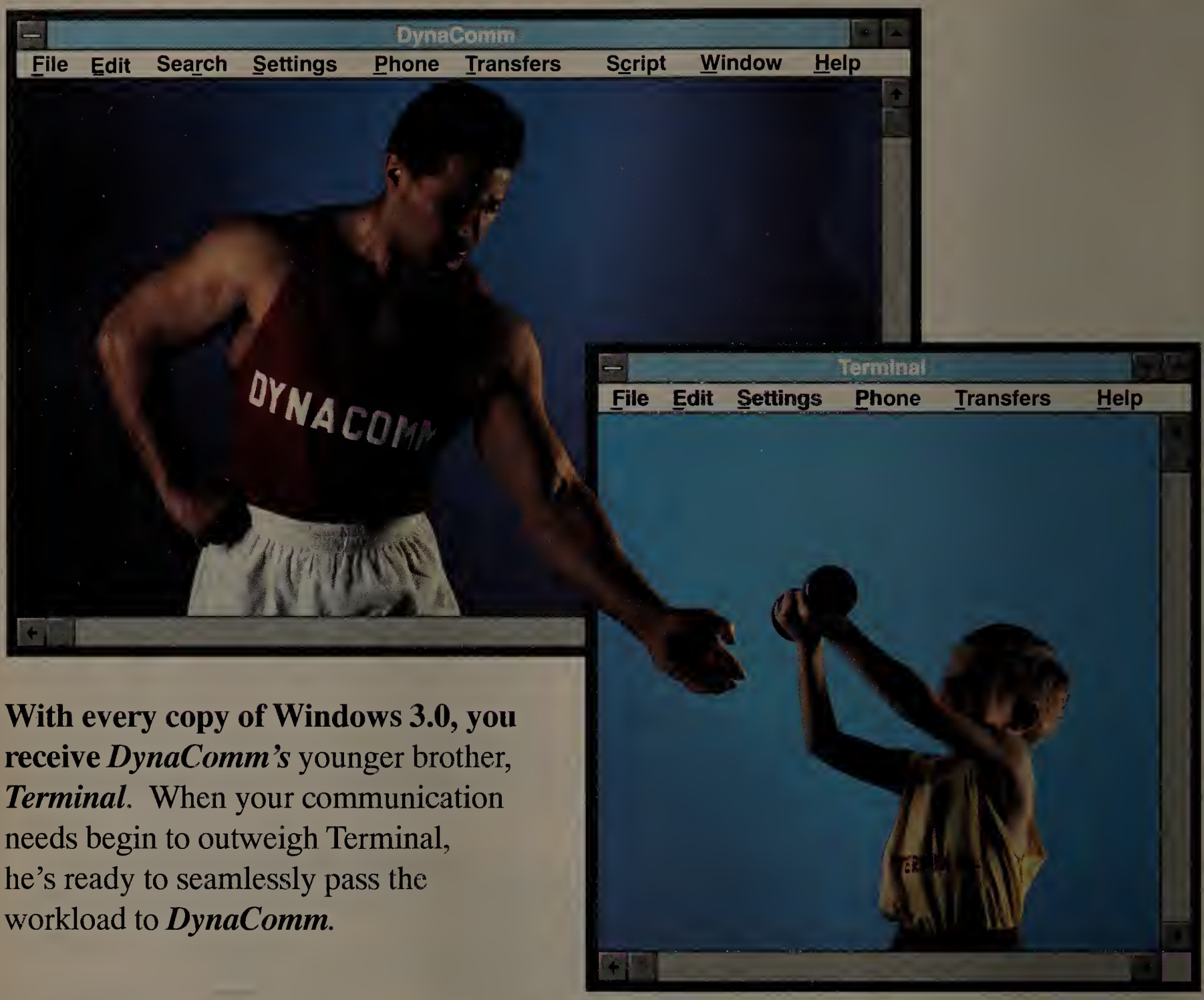

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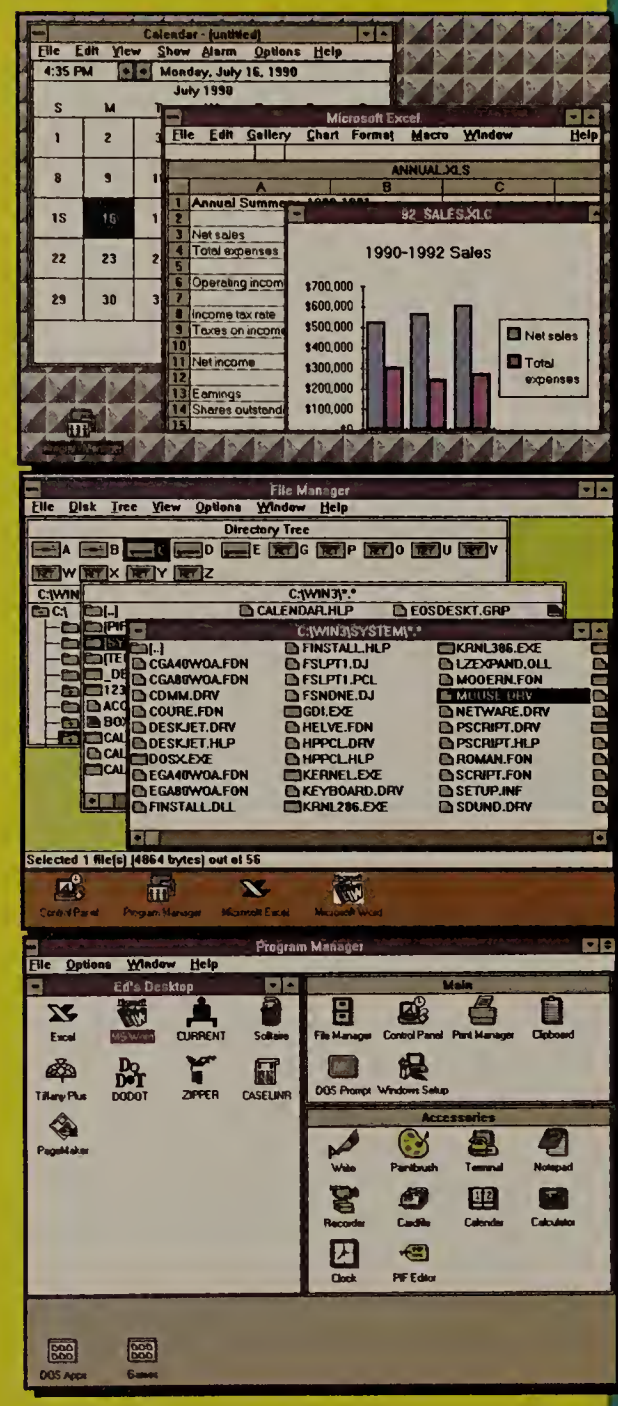

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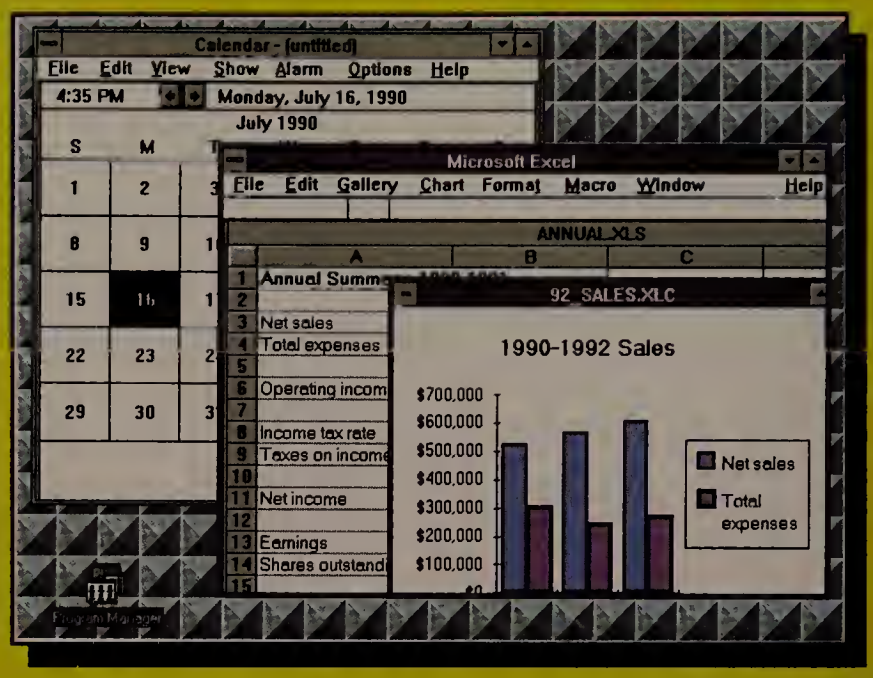

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PRODUCT OUTLOOK

Edited by MIKE HOGAN

INSIDE PRODUCT OUTLOOK

85 **PC-6220** VGA graphics in a 4-pound laptop? Sharp's feature-packed machine sets a new standard.

86 **Decisus Business Wits** Hundreds of ready-to-use programs to help you solve financial stumpers.

86 **Inner Source 2210** An uninterruptible power supply with extra juice, for people who can't afford to lose precious data.

88 **Mannesmann Tally MT906** Print graphics as quickly as text with a supercharged laser printer from Mannesmann Tally.

88 **Graph-in-the-Box Executive** A souped-up version of this popular graphics package lets you build snazzy charts without leaving your current application.

90 **Tandy 2800 HD, 4033 LX, 4016 DX, 4016 SX, 2500 XL** A laptop for the long haul and a 386 that thrives on CPU-speed memory are just part of Tandy's summer lineup.

90 **PM 1.44, Cube-Floppy 1.4** Two 3½-inch floppy drives give Next users a passport to the DOS and Macintosh realms.

92 **QuickGraph** Thirty-two quick-and-clean charts.

92 **Dell System 425E, ALR PowerVEISA 486/25** New systems from two major vendors pair two powerful technologies—the 486 CPU and the EISA bus—each for less than $8000.

94 **AMKLY Memory Boards** Compaq owners—bulk up Deskpro memory at street-smart prices.

UPDATE

94 **Symphony 2.2** You get *Magellan*-style file viewing, hot links to *1-2-3*, and *@Base* hooks to *dBASE*.

96 **Designer 3.0** New Speedo technology lets you scale fonts from within drawings, without bogging down your system.

96 **WordStar 6.0** Desktop publishing refinements—like LaserJet III support—bring *WordStar* up to snuff.

96 **Crosstalk Mk.4 2.0** It's always been powerful—now it's a breeze to use.

PC-6220

Finally—A No-Compromise Notebook PC

First there came the "diskless wonders": featherweight 286-based notebook PCs modeled after NEC's UltraLite, which unfortunately gives up both floppy and hard drives to achieve a traveling weight of less than 6 pounds. Compaq's amazing LTE/286 squeezes a standard floppy, a hard drive, *and* a modem into only 10 pounds' worth of hardware with an amazing 5 to 7 hours of battery life. But to date, all notebooks have had old-fashioned CGA or at best double-scan CGA graphics.

Sharp Electronics' PC-6220 pushes the envelope by combining the best features of earlier notebooks with VGA graphics in a bantamweight box. The 4-pound laptop is only 1.4 inches high, 8.5 inches wide, and 11 inches long, but it packs in a 12-MHz 80C286 processor, 1MB of RAM (expandable to 3MB), a 23ms 20MB hard disk, and a socket for an 80C87 coprocessor. DOS 4.01 is stored in ROM, along with *LapLink* for painless import or export of data via the serial port. An optional external floppy drive makes data swapping even easier back home.

But the most remarkable feature is the PC-6220's 10-inch, black-on-white LCD display, which makes it the first notebook with 640 by 480 VGA resolution. This screen will bring you enhanced contrast and more gray levels even when you're running color-oriented applications.

Battery life is impressive considering the power drain of such a display. Sharp claims the PC-6220 can run for 2 hours on its built-in battery, which is easily removable (and replaceable). An optional add-on "slice" battery increases battery life to a generous 5 hours—long enough for most coast-to-coast flights. Even taking the add-on battery into account, total system weight is a mere 6 pounds.

Additional options include a fax/data modem, a three-battery charger, and an expansion unit that provides either two standard AT slots or a numeric keypad. Best of all, this notable notebook is supposed to list for "under $4000," with street prices even lower. That's a steal compared to $4499 for an LTE/286 with a floppy and a 20MB hard drive. Sharp Electronics Corp., Sharp Plaza, Mahwah, NJ 07430, 201/529-8974, 201/529-9568 (fax). —*Mike Goodwin*

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Sharp's new PC-6220 is a superlight notebook PC with VGA graphics, 286 processor power, and a fast 20MB hard disk.

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The basic package, the *General Business Library*, includes 118 predesigned calculations. Also available are three libraries targeted at additional vertical markets: the *Advanced Financial Applications Library*, the *Banking and Investment Applications Library*, and the *Statistics and Sampling Applications Library*. More libraries are in the works.

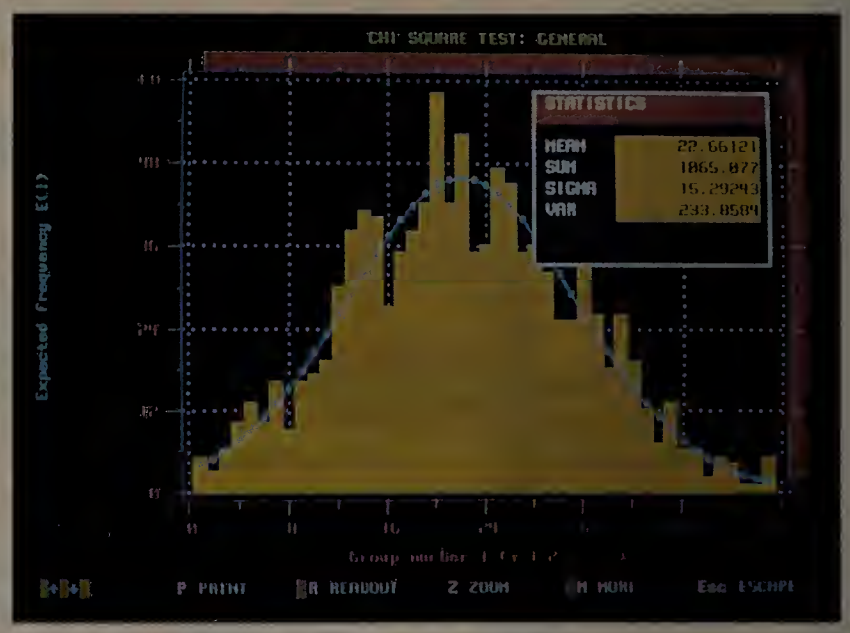
If you can't find the precise formula you need, *Business Wits* lets you create custom programs using components of existing formulas. All the formulas have been verified by Deloitte & Touche.

A computer-aided trainer helps you unlock the software's power by walking you through many of its capabilities and functions. "Auto pilots" (intelligent macros) will perform many common operations, such as creating a worksheet or importing and exporting data.

Unfortunately, all this doesn't come cheaply. The basic package requires 4MB of hard disk space, and each additional library requires varying amounts above that—as much as 2MB each. The entire package can take as much as 10MB. Additionally, data is imported into *Business Wits* in ASCII format only.

The *Business Wits General Business Library* sells for $695. Additional libraries cost $195 each. The program requires DOS 3.1 or a later version and 640K of RAM. A 286 system is recommended. Decisus, Inc., 9938 Via Pasar, Ste. A, San Diego, CA, 92126; 800/433-0307. —*Roberta Furger*

Reader service no. 701



The chi-square test is one of 118 predesigned calculations available for forecasting in Business Wits. Just plug your variables into the program's worksheet, which already includes the necessary formulas.

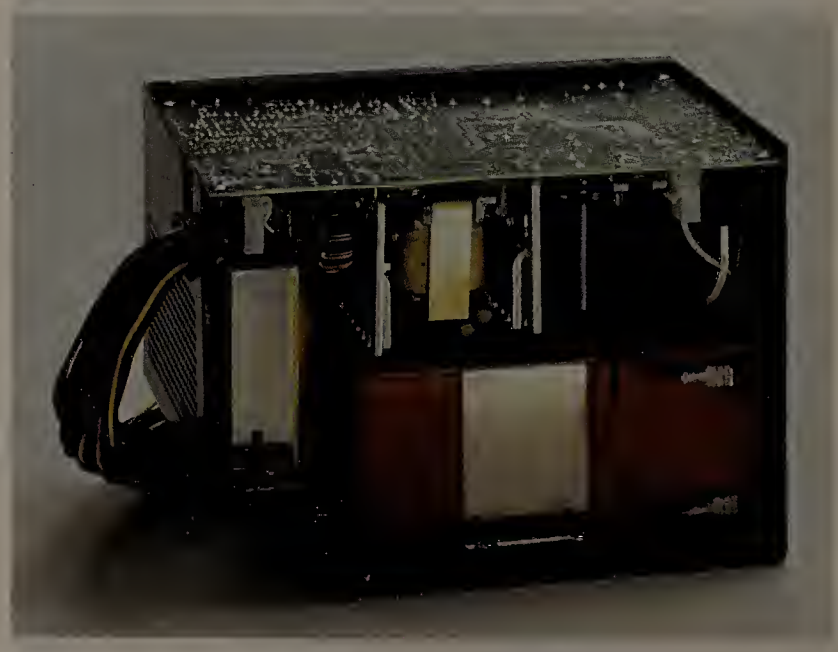
Inner Source 2210

Fail-Safe Answer to Power Problems

Embarrassment is crashing a hard disk you haven't backed up for a month. Outrage is having a power failure or power surge crash it for you.

PC Power and Cooling's Inner Source 2210 is a combination power supply, uninterruptible power supply (UPS), and surge suppressor that, for only $495, will protect you from brownouts, blackouts, spikes, surges, and careless hands on the circuit breaker.

An internal unit, Inner Source 2210 replaces the interruptible power supply you already have in your AT or 386. It takes up the same amount of space, comes in both desktop and tower versions, and provides 220 watts of DC power to the computer and another 100 watts of AC power to the monitor under normal operation.



Inner Source 2210 doesn't take up any more space than your current power supply, but it gives you the added protection of an uninterruptible power supply (UPS) and surge suppressor.

It will provide the same amount of power for 8 minutes in the event of a total blackout; in fact, it kicks in any time power to it dips below 93 volts. At the other end of the spectrum, it protects hard drives and other components from surges and spikes that can occur in conjunction with a power failure.

Inner Source 2210 kicks in backup power within 2 milliseconds of a power dip and sounds an audible alarm. It automatically recharges itself fully in 8 hours, even if the computer is turned off. The lead/acid battery's life is three years.

You can install the 14-pound black box in minutes without any assistance from your dealer. Because Inner Source 2210 does the job of three products in one, it's more energy efficient. It's also more reliable, it reduces heat and electromagnetic interference, and it frees you from placing additional equipment atop or next to your computer. PC Power and Cooling Co., 31510 Mountain Way, Bonsall, CA 92003; 619/723-9513, 619/723-0075 (fax). —*Mike Hogan*

Reader service no. 700

New Windows Version Available
Supports Microsoft Windows 3.0

I write pretty well.

HOMONYM ERROR

Really, my only problem have too do with grammar.

You know--possessives, plurals, and punctuation--when I have time, I look each one up.

My friend swears by Grammatik IV.

He says it corrects thousands of grammar errors, easily, like a spelling checkers.

Well, Grammatik *did* improve his writing.

And writing error are embarrassing.

I probably don't need it, but for only $99 and a money-back guarantee, maybe I should try it...

What do you think?

There are eight errors in the sentences above. How many can you find? (The answers are below, but don't cheat.) Grammatik IV found all eight in 15 seconds. Which is why it's guaranteed to improve your writing within 30 days or your money back. Just press a hot-key combination inside your favorite word processor,* and Grammatik proofreads each sentence for errors in grammar, style, punctuation, usage and spelling. You'll have clear, concise, and greatly improved writing in minutes.

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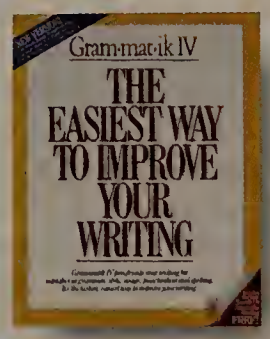
Best In Its Class 9/4/89

See your dealer or order now for only $99 (Network Edition only $189), and get DeWitt Scott's new book, *Secrets of Successful Writing,* (a $9.95 value) absolutely free.

(800) 872-9933

Gram·mat·ik™ IV

Improve Your Writing With The #1 Grammar Checker



ANSWERS: Sentence 2–"problem have" (Verb Agreement: The singular noun *problem* may be used incorrectly with the plural form of the verb *have*.) Sentence 2–"too" (Homonym: Unless you mean also or overly for *too*, you probably mean *to* or *two*.) Sentence 3–"each one" (Long-winded or wordy) Sentence 3–"one up." (Avoid ending a sentence with a preposition.) Sentence 5–"a spelling checkers" (Article: Usually *a* is used with a singular noun or phrase.) Sentence 7–"And" (Cliche: Use sparingly to start a sentence.) Sentence 7–"are" (Verb Agreement: Be sure you are using *are* with a plural subject.) Sentence 8–"..." (Ellipsis mark: The proper form is....)

Reference Software

**New Grammatik IV works inside WordPerfect® 5.0/5.1, Microsoft Word™ 5.0, WordStar® 5.5, Professional Write® 2.1, and XyWrite III, and works directly on files created by 33 word processors.*
Grammatik is a trademark of Wang Laboratories, Inc. © 1989 Reference Software International, 330 Townsend St., Suite 123, San Francisco, CA 94107. (415) 541-0222.

Circle 282 on reader service card

Mannesmann Tally MT906

Laser Printer Sports Fast Controller, Options to Spare

The MT906's Jade controller uses its own processor to describe images as quickly as it prints text, giving the laser effective throughput far beyond the TEC engine's 6-page-per-minute rating.

In a laser printer, the controller has as much to do with quick page delivery as the engine—especially when you're mixing text with graphics. Any combination of type size, typeface, and graphics can cut your printer's output to less than half the engine's rated speed.

The Jade controller in Mannesmann Tally's MT906 is a supercharger that the manufacturer claims actually drives the printer's TEC engine past its standard 6-ppm rate. The heart of the controller is the National Semiconductor NS32CG16 processor, which processes high-level page description and bit-mapped images as quickly as text, thanks to its unique special graphics instructions, 32-bit ALU, 32-bit registers, additional addressing modes, and memory-to-memory transfer capability.

The 300-dpi MT906 measures a trim 8.3 by 15.4 by 16.1 inches and weighs 35 pounds. Inside you'll find a laser and a $154 cartridge-type drum that is good for 10,000 pages. Toner cartridges, which list at two for $45, last 3000 pages each. Engine life is rated at over 300,000 pages, with a recommended work load of 4000 pages per month.

The basic MT906 with 512K of memory, LaserJet Series II emulation, six resident fonts, and a 150-sheet feeder lists at $2195. A memory upgrade slot lets you add 1MB ($450), 2MB ($850), or 4MB ($1550).

A $2595 word processing version, the MT906WP, adds a dual-bin feeder ($395 separately) holding either 250 sheets or a 50-envelope cassette ($55 separately) per bin. The MT906PS PostScript version comes with 2.5MB of memory, 35 PostScript-compatible Bitstream fonts, and an integrated Floating Point Unit coprocessor to accelerate processing. It lists for $3495, but you can add the same features to your entry-level MT906 for $1450.

Other options include an Epson FX—and IBM Proprinter—emulation cartridge priced at $250 and a bevy of HP-compatible font cartridges that list at $185 per cartridge. Mannesmann Tally Corp., 8301 S. 180th St., Kent, WA 98032; 800/843-1347, 206/2515524, 206/251-5520 (fax). *—Rex Farrance*

Reader service no. 693

Graph-in-the-Box Executive

Pop-Up Graphs for the Boardroom

Graph-in-the-Box has always been the *SideKick* of graphics programs: You load it as a memory-resident package and build a quick chart with data that you grab from your main application. A neat idea—except that until now, *Graph-in-the-Box*'s slim set of features has meant bare-bones output.

A better-equipped, $299.95 variation on the same theme, *Graph-in-the-Box Executive* goes a long way toward supporting more attractive output. You get 3-D effects, nine fonts instead of one, and a selection of charts (including trend charts) approaching that of high-end packages like *Freelance Plus* and *Harvard Graphics*. The chart-editing capabilities still pale in comparison to those of the heavy hitters, and you can forget about drawing features altogether, but *Graph-in-the-Box Executive* is well suited to spicing up reports.

Excel, *Quattro*, and *SuperCalc* offer more presentation punch than *Graph-in-the-Box Executive*. This program is aimed at word processors and desktop publishers, and the manual provides specific instructions for exporting files to *WordPerfect*, *Word*, *PageMaker*, and *Ventura*. *Graph-in-the-Box Executive* offers a set of basic spreadsheetlike functions as well.

When inactive, *Graph-in-the-Box Executive* requires only a 10K kernel; pop up the program, and it snatches 300K, swapping as much of the main application as necessary to disk or expanded memory. The package supports about 200 printers and plotters. You can still get the original *Graph-in-the-Box* for $139.95. New England Software, Inc., Greenwich Office Park #3, Greenwich, CT 06831; 203/625-0062, 203/625-0718 (fax). *—Eric Knorr*

Reader service no. 698

A TSR graphing package, Graph-in-the-Box Executive supports more attractive output than its predecessor, for more font and chart choices.

Hard Disks Die.

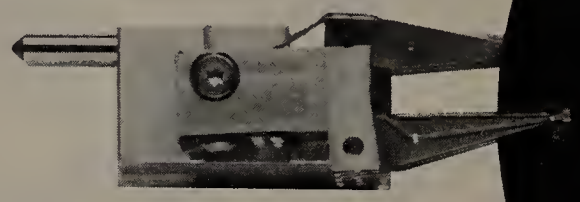
Hard disk manufacturers want us to believe that hard disk technology is absolutely reliable ... but experience teaches otherwise. We depend upon data storage to be flawless, but hard disk technology isn't. Surface defects, head alignment drift, and low-level format aging cause hard disks to fail.

A hard disk drive's low-level format fades with use. The drive's read/write heads lose their delicate alignment and move away from the original low-level format information. These new data track locations intersect unseen surface defects that were once harmlessly located between tracks. DOS's chilling "Abort, Retry, or Fail ?" message inevitably results. Precious data is soon lost.

If left unchecked, data storage becomes more an act of hope and faith than one of science.

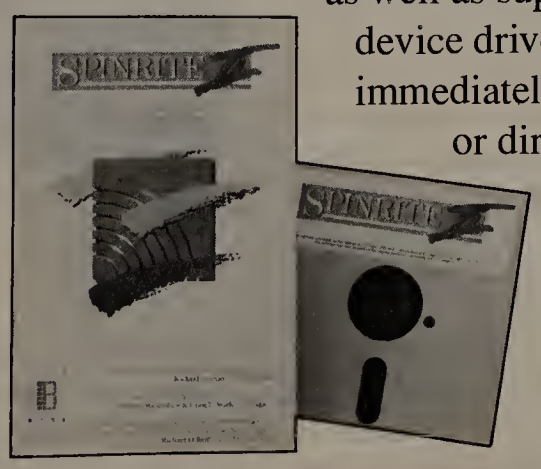
A return to science. The problem is known and understood, and the solution is clear. While a drive's data can still be read, the drive must be given a new, realigned and strong low-level format. Then all current surface defects must be located and managed. This process prevents hard disk data loss.

An act of prevention. Gibson Research Corporation's SpinRite™ software program reads hard-to-read and impossible-to-read data from a DOS hard disk, nondestructively low-level reformats the drive's surface while optimizing the sector interleave factor, analyzes and scrubs each track of the drive for surface defects, and relocates any endangered data to safety. SpinRite easily restores hard disk drives to better-than-new condition with their data intact. Before any data is lost, SpinRite detects that a drive is "softening" then determines and eliminates the cause. SpinRite readily recovers data that the system cannot read.



SpinRite won Byte Magazine's prestigious Award of Distinction and continues to win computer industry praise and acclaim. It has proven itself to be effective in preventing hard disk failure. SpinRite will work for you.

SpinRite II features a detailed technical log, as well as support for DOS 4 and large device driver partitions. It is available immediately from local software retailers or directly from Gibson Research with a 30-day satisfaction guarantee.



Suggested retail price: $89.

To receive additional literature or to purchase SpinRite II, call toll-free:

(800) 736-0637.

SpinRite II.

A return to science.
An act of prevention.

Circle 92 on reader service card

Tandy 2800 HD, 4033 LX, 4016 DX, 4016 SX, 2500 XL

Tandy Fills Out Its System Lineup

Tandy has spruced up its product line with new models, beginning with a laptop that gives you room to move.

At 12½ pounds, the Tandy 2800 HD isn't the lightest laptop you'll ever heft. But if your work load is choking an 8088-based carry-along, you can improve your punch per pound with the 2800's 12.5-MHz 80C286 CPU and 28ms 20MB hard disk. The 9-inch electroluminescent screen shines for 2 hours on a single battery charge, and you get 1MB of memory expandable to 2MB. A 3½-inch 1.44MB floppy is standard on the $3499 laptop. For more connectivity, add the $200 2400-bps internal modem.

Tandy's 4016 SX is undistinguished but has a noteworthy price.

Tandy's new top-of-the-line machine is the 4033 LX, a 33-MHz 386-based system bolstered with 32K of 20ns cache memory and an Intel 82385 controller. There's no motherboard memory on this $5999 machine since it uses a CPU card, but you can pack two dedicated 32-bit memory slots with up to 16MB of CPU-speed memory. You get a choice of 40MB or 80MB hard drives—hardly excessive for this class of PC.

The 4033 LX and the $2999 4016 DX—a similar but cacheless 16-MHz 386-based replacement for the Tandy 4000—come in full-sized cases with six 8/16-bit expansion slots. One slot in each is occupied by a bundled VGA video controller. Tandy's 386SX-based 4016 SX and 286-based 2500 XL, on the other hand, come in small-footprint cases that are designed for easier access inside but feature just three 8/16-bit expansion slots. Both machines include VGA and floppy controllers on their motherboards.

Tandy's 16-MHz 4016 SX is a rather undistinguished 386SX, but it has a noteworthy price of $1999 and accepts up to 4MB of system memory on the motherboard. The 10-MHz 2500 XL, Tandy's new midrange workhorse, is intended to lend a helping hand to new users. DOS 3.3 and Tandy's *DeskMate 3* are loaded into ROM so that when you turn the XL on, you automatically get the graphical environment, from which you can point and shoot your way into applications. The 2500 XL is priced at $1499.

All the machines come with a 1.44MB, 3½-inch floppy, a 16-bit VGA controller, and 1MB of memory (except the 4033 LX, which has 2MB standard). The 28ms 40MB hard disk for all systems but the laptop costs $649 extra, and the 19ms 80MB drive is $899. Tandy Corp., 1800 One Tandy Center, Fort Worth, TX 76102; 817/390-3011, 817/390-2774. —*Mark Henricks*

Reader service no. 697

PM 1.44, CubeFloppy 1.4

Floppy Drives Help Next System Read DOS, Mac Files

Users of the Next Computer can now take a step toward the mainstream of desktop computing thanks to two floppy drive options.

Pacific Micro's PM 1.44 and Digital Instrumentation Technology's CubeFloppy 1.4 are 1.44MB external floppy drives that let Next users store and distribute their files on standard 3½-inch media. The peripherals also make it easier for the sleek, black UNIX-based box to use word processing, spreadsheet, and graphics files generated in the DOS and Macintosh worlds.

As sleek and black as the Next, both the PM 1.44 and CubeFloppy 1.4 sport a SCSI interface and come bundled with software that conforms to the look-and-feel guidelines of the Next environment and lets you read DOS disks formatted at 720K or 1.44MB (in addition to 1.44MB Mac SuperDrive disks).

The Next's bundled Icon software can read ASCII, Rich Text Format, PostScript EPS, and TIFF files created on DOS computers and Macs, but the CubeFloppy 1.4 includes translation filter software to make transferred files more readable. The Pacific Micro drive sells for $995, while the DIT drive is $795. —*Mike Hogan*

Pacific Micro's PM 1.44 and Digital Instrumentation Technology's CubeFloppy 1.4 give the Next machine the benefit of a 1.44MB external floppy for swapping files and software with other machines.

Pacific Micro Electronics, 201 San Antonio Cir. #C250, Mountain View, CA 94040; 800/628-3475, 415/948-6200.

Reader service no. 704

Digital Instrumentation Technology, Inc., 901 18th St. #11000, Los Alamos, NM 87544; 505/662-1459, 505/662-0099 (fax).

Reader service no. 705

Cut Through Your Accounting Maze With The New Version Of OPEN SYSTEMS™ Accounting Software

Faster and easier than ever, the new version 4.0 of OPEN SYSTEMS Accounting Software (OSAS) is your shortcut to saving precious time and money.

OSAS is easy to install and use with simple commands and help functions. Start with the core modules and add applications as you grow. You can tailor OSAS for your unique business needs or industry. And you can choose from DOS, Local Area Networks, XENIX, or UNIX V operating environments.

Since our founding in 1976, Open Systems has been a leader in guiding businesses like yours through the paper jungle. Over 150,000 businesses worldwide use information from OSAS applications to make timely, accurate decisions.

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Circle 209 on reader service card

QuickGraph

Simple Package Turns Out Power-Packed Charts in a Hurry

What the world really needs is a good 5-minute graph. Make that 3 minutes, which Sumak Enterprises claims is all the time you'll need to make any of *QuickGraph*'s 32 types of charts.

QuickGraph is meant for users who need to create solid graphics for business presentations and reports but don't want to spend the money buying (or the time learning) full-blown graphics packages or high-end spreadsheets. It trades bells and whistles—like a spelling checker or support for on-screen slide shows—for speed and simplicity.

The clean user interface lets you easily hop among nine well-designed, *Windows*-like dialog boxes. You can enter numbers in *QuickGraph*'s 15-by-150-cell worksheet or import *1-2-3*, *dBASE III*, ASCII, or ASCII-delimited files. (You can edit and select imported data by row or column and set up hot links between the original file and the resulting chart.) Once the numbers are in, *QuickGraph* lets you preview the results, modify the chart type, and customize it with 15 colors or patterns, text, and other enhancements.

QuickGraph is for users who don't want to learn a full-blown graphics package.

While *QuickGraph* doesn't do word charts, it can export file types accepted by leading word processors such as *WordPerfect*, *WordStar*, and *Microsoft Word*. *QuickGraph* supports more than 100 different printers, although direct drivers for PostScript devices and slide makers are not yet included. *QuickGraph* costs $99.95 and works with mouse or keys. The program requires 512K of RAM, 750K of disk space, CGA or better graphics, and DOS 2.0 or a later version. Sumak Enterprises, 39 Dawson Dr., Sudbury, MA 01776; 508/443-0205. —*Eric Bender*

Reader service no. 703

Dell System 425E, ALR PowerVEISA 486/25

486s Take It EISA

Technically, you pair the EISA bus with a 25-MHz 486 CPU only for the toughest computing jobs. But two machines from Dell and Advanced Logic Research (ALR) make that strapping combo suitable for many more applications, as the first sub-$8000 systems of their kind from major vendors.

These aren't twins, and the Dell System 425E is clearly the less technically adventurous of the two. Dell opted not to include an external memory cache in its desktop design. An external cache costs an extra $300 to $400, making it uneconomical for the bulk of nonscientific applications, Dell says. The company claims that improved I/O throughput on the EISA bus gives the machine better performance than you'll get from a 486 ISA machine with an external cache.

ALR's floor-standing PowerVEISA 486/25, on the other hand, includes 64K of 25ns cache memory on an upgradable card in a proprietary FlexCache+ to ensure that the 486 won't be slowed by memory accesses, even in burst mode. ALR goes the extra mile by including a caching ESDI controller with 64K of on-board memory. That, the company says, gives you the full effect of the EISA design in disk-intensive operations such as network, server, CAD, and large data base applications.

Each of the machines boasts five storage device bays, six 32-bit EISA slots, and a pair of 8/16-bit ISA openings (ALR also throws in an 8-bit ISA slot). With all those expansion options, Dell's 270-watt power supply might give the Dell an advantage over the ALR, which has a 200-watt supply. The Dell ships standard with a 16-bit VGA controller card, while ALR leaves video up to the user.

ALR supports a maximum 17MB of system-speed memory, and Dell's system tops out at 16MB. You get serial, parallel, and mouse ports from ALR; Dell opts for an extra serial port instead of the mouse port.

With 4MB of memory, a monochrome VGA monitor and card, a 1.2MB 5¼-inch or 1.44MB 3½-inch floppy, and a 25ms 80MB hard drive, Dell's System 425E is priced at $7899. Fully loaded with a 16ms 650MB ESDI drive, a 1024 by 768 video card, and a 16-inch high-resolution monitor, the System 425E runs $12,499.

ALR's PowerVEISA 25/4, with 5MB of memory, a Paradise VGA card, and a similar 80MB drive, is $7824. With an 18ms 330MB ESDI drive, the price goes to $11,495. The 486/33 module, which you can swap in for the original CPU card, costs $3195. —*Mark Henricks*

Dell Computer Corp., 9505 Arboretum Blvd., Austin, TX 78759-7299; 800/426-5150, 800/727-8320 (fax).

Reader service no. 694

Advanced Logic Research Inc., 9401 Jeronimo, Irvine, CA 92718; 800/444-4257, 714/581-9240 (fax).

Reader service no. 695

Dell's System 425E and ALR's PowerVEISA 486/25 team Intel's powerful i486 processor with the fast EISA bus for processing-intensive jobs.

75 reasons to buy *SoftType*

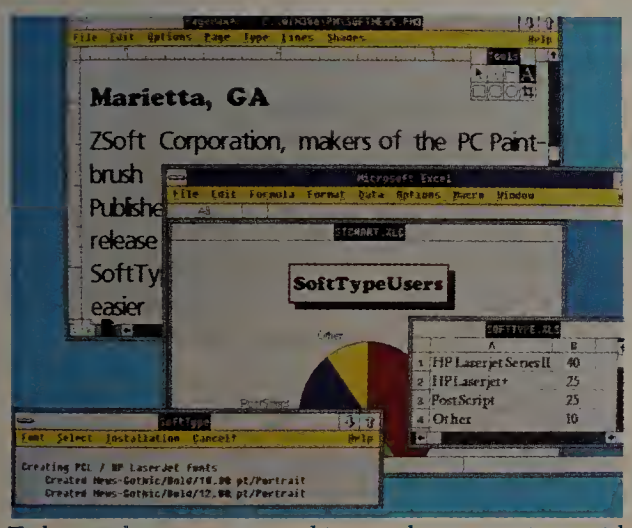
1–62 You get all the typefaces shown on the right.

63 Sizing is easy. Pick any point size, 1 to 72 point, in 0.01-point increments.

64 Styling is a breeze, too. A simple dialog box lets you rotate, expand or slant letters. And add shadows or outlines.

65 You can set gray density of outlines and characters, and create gradated shadows.

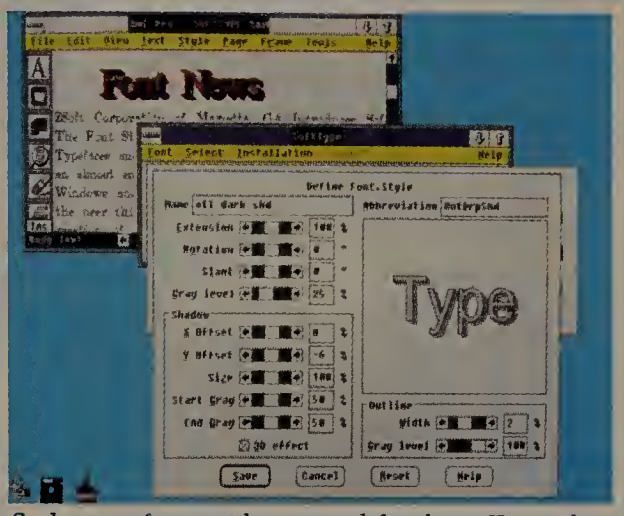
66 Extremely easy to learn. On-line help. Real font names instead of technical jargon.



Enhance documents, graphics, and presentations with SoftType fonts for a polished, persuasive look.

67 Fast to use. Automatically installs fonts and creates appropriate screen fonts.

68 Works with any Windows application, including word processing, desktop publishing, charting and spreadsheet systems.



Style your fonts with ease and freedom. Expand, rotate, and slant to any degree, add adjustable shadows and outlines, and control the gray level. Give every font just the look you want.

69 Works with other ZSoft products such as PC Paintbrush IV™ and PC Paintbrush IV Plus.™

70 Works in the background while you work with Microsoft® Excel, Pagemaker® or other Windows applications. So you're more productive.

71 Works with Ventura Publisher®

72 Drives printers compatible with HP LaserJet+™ or PostScript® language.

73 Consistently excellent quality. All faces are handcrafted by type artists at URW™ of Germany.

74 Infinite versatility. It sizes and styles any typefaces you create or edit with Publisher's Type Foundry® (optional).

75 All this for only **$199**.

ZSoft
CORPORATION

ZSoft Corporation
450 Franklin Road / Suite 100
Marietta, Georgia 30067
(404) 428-0008
FAX: (404) 427-1150

All of the following 62 high-quality typefaces come FREE with SoftType.™

American-Uncial
Antique-Olive Bold
Antique-Olive
Ariston Extra-Bold
Baskerville Bold
Baskerville
Baskerville Italic
Bauer-Bodoni Bold
Bauer-Bodoni
Bauer-Bodoni Italic
Blippo Heavy
Brush-Script
Schoolbook Bold
Schoolbook Bold Italic
Schoolbook
Schoolbook Italic
Cooper Heavy
Cooper Heavy Italic
Eurostile Bold
Eurostile
Flora Bold
Flora
Frutiger Bold
Frutiger
Futura Bold
Futura
Garamond Bold
Garamond Medium
Garamond Medium Italic
Garamond
Garamond Italic
Goudy-Old-Style Bold
Goudy-Old-Style
Goudy-Old-Style Italic
Kaufmann Bold
Latin-Wide
Mariage
Mono Bold
Mono
Mono Italic
News-Gothic Bold
News-Gothic
Old Towne
Palatino
Palatino Italic
Palatino Semi-bold
Park-Avenue
Roman Bold
Roman Bold Italic
Roman Extra-bold
Roman Extra-bold Italic
Roman
Roman Italic
Sans Bold
Sans Heavy
Sans Light
Sans
Sans Thin
Slogan
STENCIL
Univers Bold
Univers

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To order, send $199.00 plus $4.90 shipping and handling to: ZSoft Corp., Dept. WX, P.O. Box 8123, San Francisco, CA 94128. Specify 1.2 meg. 5.25" or 720K 3.5" disk. CA (6.25%) and TX (7.5%) residents, add sales tax. COD orders must add $3.00. Canadian customers, add $15.90 for air shipping. Payment must be in U.S. funds by check, money order, VISA, MasterCard or American Express. Not for sale outside North America.

Circle 206 on reader service card

AMKLY Memory Boards

Affordable Memory for Your Compaq

If you need more memory in your Compaq Deskpro but blanch at Compaq memory upgrade prices, AMKLY Systems may offer a more palatable solution.

Memory is a commodity whose per-megabyte price rises and falls dramatically. Neither AMKLY nor Compaq wants to stockpile memory, but both companies do it in order to sell you more Deskpros and/or memory boards. Where AMKLY differs is that its line of Deskpro-compatible memory boards lets you save money by buying your own Single In-Line Memory Modules (SIMMs) through the mail or from a local distributor, paying far lower prices than you would for fully populated memory boards from Compaq.

For example, an AMpac-SIMM1000s 1MB board for the Deskpro 386S is $625—a modest saving over Compaq's $699 equivalent. But it would cost you only $3485 to load the 386S with its maximum of 13MB using AMKLY add-ons, versus $6597 if you stuck with Compaq upgrades. You can save far more by taking a 1MB AMKLY SIMM board, tossing its four 256K SIMMs, and populating it with 12MB of low-cost 1MB SIMMs purchased from a mail-order supplier. With AMKLY boards, you add memory just by plugging more SIMMs into the sockets on their boards, while Compaq requires you to buy add-on daughtercards.

AMKLY sells 13 expansion products including memory boards, SIMM memory modules, and daughtercards designed to upgrade either systems or boards from Compaq. Currently, SIMM boards and

AMKLY memory boards let you upgrade your Compaq Deskpro less expensively than with Compaq boards: You can purchase standard Single In-Line Memory Modules through the mail or from a local distributor.

memory modules are available only for the Deskpro 386S and 386/20E, starting at 1MB and topping out at 12MB. The company also offers non-SIMM boards and DRAM modules for those systems and for the Deskpro 286E, 386/20, 386/25, and 386/33—all at only modest savings over Compaq's.

AMKLY says that its boards are fully compatible with Deskpro systems, plugging directly into a 16-bit slot on the Deskpro 286E and into the proprietary 32-bit slots on 386 models without modification. AMKLY Systems Inc., 60 Technology Dr., Irvine, CA 92718; 714/727-0788, 714/727-9521 (fax). —*Mark Henricks*

Reader service no. 702

UPDATE

Symphony 2.2

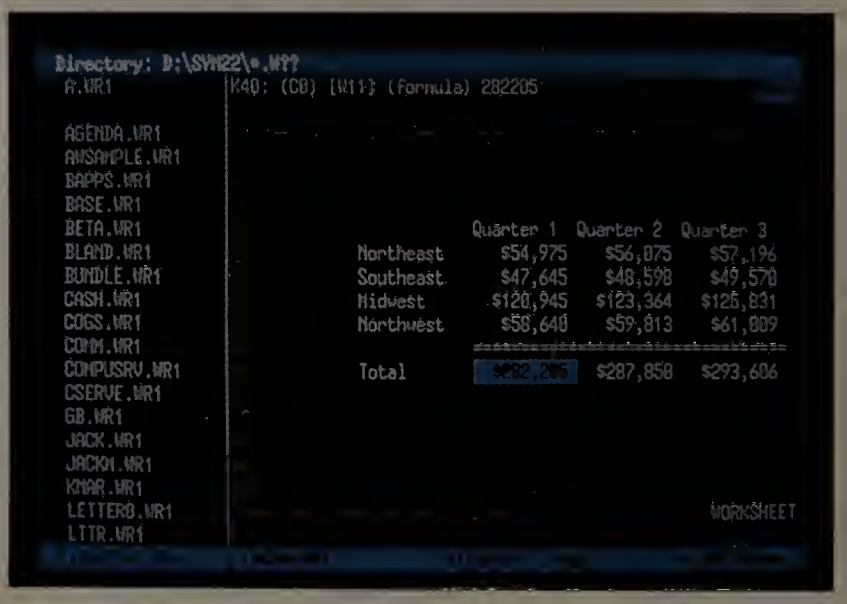
Workhorse Gets an Upgrade

Lotus has released a new version of *Symphony* that includes *Magellan* file viewer technology, the *@Base* add-in, and improved memory handling.

Release 2.2 of the integrated package lets you link *Symphony* files to those of *1-2-3* releases 2.01 and 2.2; you can even create links between cells in an active worksheet in memory and cells in worksheet files stored on the hard disk. The program then updates the linked formula automatically with the latest data whenever a file is retrieved.

Magellan viewer technology enables you to locate and preview files on your hard disk, while Personics' *@Base* extends *Symphony*'s data base module, letting you create and edit *dBASE III* files from within a *Symphony* worksheet. With *@Base*, you can import or export *dBASE* files from within *Symphony*.

The new version handles available memory better and gives you access to 4MB of EMS 3.2 expanded memory for larger worksheets and applications. The *Allways* spreadsheet publishing add-in is better integrated, supporting eight font types, highlights, shadow boxes, and grid lines. You can now directly edit cells from within *Allways*, combining text, graphics, data tables, and charts on a page.



The latest release of Lotus's Symphony includes Magellan file viewer technology for simplified previewing, retrieval, and linking of files.

Symphony 2.2, which sells for $695, requires a hard disk and 512K of memory (640K for *Allways* or *@Base*). Registered users can upgrade for $150. Upgrades from packages purchased between February 20 and April 19 are available for a $30 handling fee. Lotus Development Corp., 55 Cambridge Pkwy., Cambridge, MA, 02142; 617/577-8500. —*Roberta Furger*

Reader service no. 706

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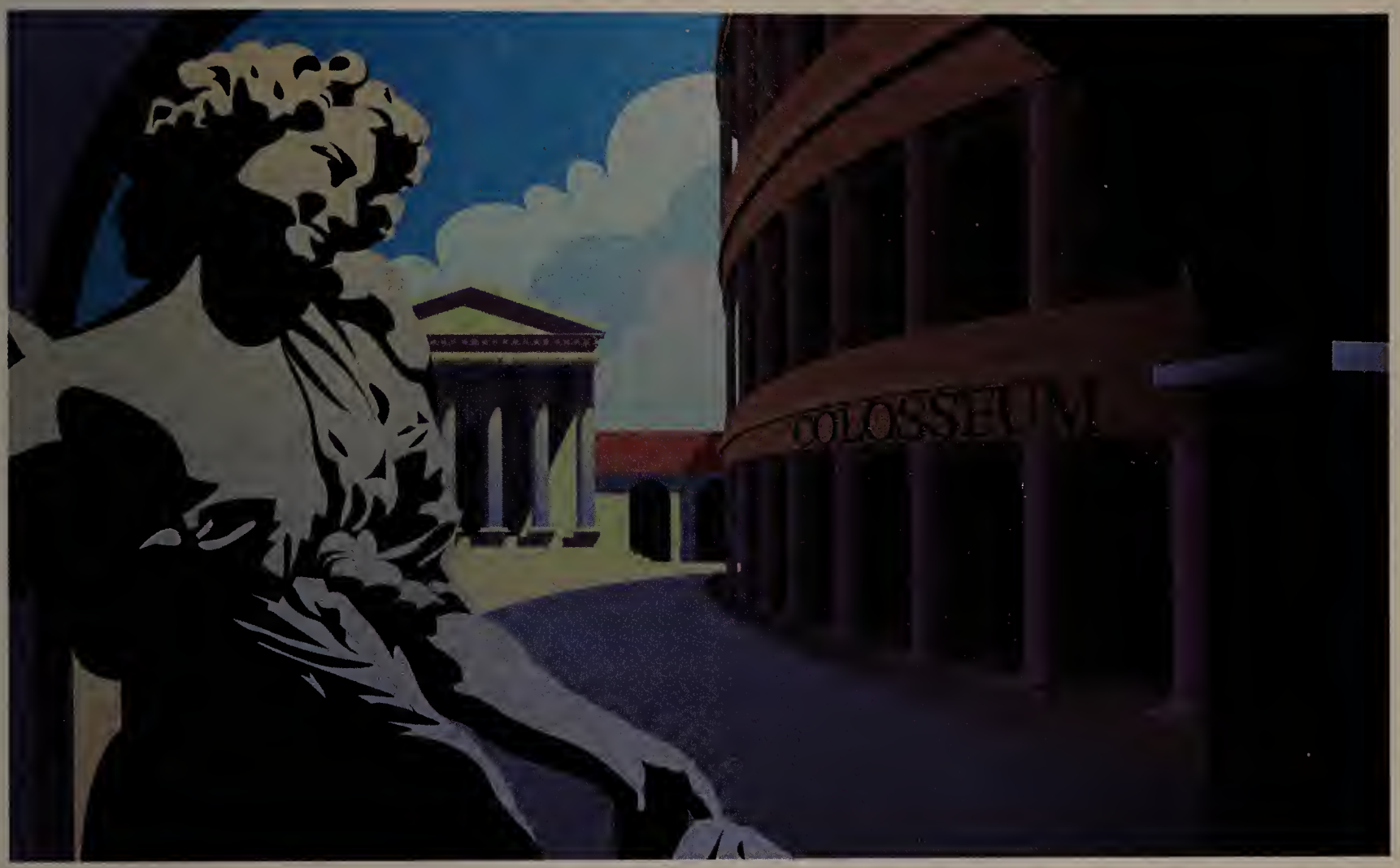

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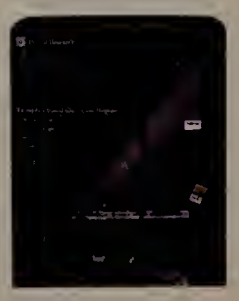

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Circle 55 on reader service card

Designer 3.0

On-the-Fly Scalable Fonts Are Top Draw

Micrografx's high-end drawing program is one of the first to ship with Bitstream's new Speedo font-scaling technology, letting you scale fonts for *Designer 3.0* legends and labels on the fly. You no longer have to spend tedious minutes watching a 'Wait please' message on your display or warehouse kilobytes' worth of type sizes on your hard disk.

Designer 3.0 gives you 41 Bitstream and URW outline fonts to get you started, and you'll find it easy to mix fonts right inside your drawing, thanks to a beefed-up text editor with word-processor-like features such as word wrap and margin setting.

The program has some interesting drawing features headlined by color autotrace, which lets you convert the bit maps of color PCX and TIFF images into vector images the way you would with black-and-white autotrace, while retaining all the colors.

In *Designer*'s toolbox you'll also find calligraphic pens that duplicate the distinctive strokes of Oriental calligraphic brushes. The improved Bézier curve tool lets you edit Béziers as you draw them, rather than forcing you to convert a polygon to a Bézier later and delete unwanted points.

You can fill headlines and other objects with, say, a Hawaiian sunset or a symbol, or draw a brick and fill a drawing of a house with bricks. The program's scale is so precise that you can reliably calculate from a *Designer* blueprint the number of bricks or figure the amount of lumber you'll need to build your real house.

Among numerous refinements to the user interface is a clip-art interface that lets you scan your library of clip art in a window to preview how an item will look in your drawing before loading it. Finally, *Designer 3.0*'s package includes a utility for automating on-screen slide shows, and instructions for connecting to the Micrografx slide-making service via modem.

The $695 *Designer 3.0* runs under *Windows 2.*x on a 286 machine with an EGA or VGA card, 1MB of memory, and a hard disk. Upgrades are $99 for registered users. Upgrades from *Designer 3.0* to *3.01* for *Windows 3.0* will be free. Micrografx, Inc., 1303 Arapaho, Richardson, TX 75081; 800/733-3729, 214/234-2410 (fax). —*Mike Hogan*

Reader service no. 707

WordStar 6.0

Classic Word Processor Goes Upscale

WordStar 6.0, the latest upgrade to WordStar International's classic word processor, aims to please with a few good desktop publishing enhancements. The $495 version ships with improved scalable font capabilities and expanded printer support. In addition, it offers kerning and automatic conversion of other popular word processing formats. *WordStar 5.5* continues to be supported and sold at a reduced rate of $395 for users who don't need the extra capabilities.

The company claims that *WordStar 6.0* brings users font-scaling technology much like that found in PostScript printers and the Hewlett-Packard LaserJet III. Fonts sized from .25 to 999.75 points can be specified in .25-point increments from within a document—the program automatically adjusts line length and spacing. And to improve the look of your newsletters and brochures, *WordStar 6.0* now has the ability to adjust kerning pairs. *WordStar* includes coupons that allow you to purchase Bitstream's *Fontware* and AGFA Compugraphic's *Type Director 2.0* for $15 each. *WordStar 6.0* lists at $495; upgrades are $119. WordStar Int'l., 201 Alameda Del Prado, Novato, CA 94949; 800/227-5609, 415/883-1533 (fax). —*Rex Farrance*

Reader service no. 709

Crosstalk Mk.4 2.0

Crosstalk Puts On a Friendlier Face

Widely viewed as the most powerful PC communications package available, DCA's *Crosstalk Mk.4* has long suffered an image problem: It's a bear to set up and use. No longer. Version 2.0 replaces its clunky menu system and cardfile phone book with a first-rate, *Procomm*-like dialing directory.

The directory is a far cry from the tacky CASL-generated add-on of the previous version. Instead of hunting through numerous setup menus to change parameters, you simply press <Enter> on a dialing entry and change the settings on the spot. You can toggle through various directory display combinations to show only the fields that you want to see.

Crosstalk Mk.4 now provides <Alt>-*key* combinations that pop you into other modules, such as a setup screen where you can (finally) set global parameters and an improved text editor. The context-sensitive help offers a hypertextlike search feature that pops up explanations when you enter a CASL script command in the editor. The unfriendly error messages of the previous version are replaced with context-sensitive suggestions, and the menus now offer pop-up lists instead of forcing you to type in entries by memory. An informative status line and an on-screen template of customizable function key assignments also improve the interface.

In a last-ditch effort to woo die-hard *Crosstalk XVI* fans to *Mk.4*, DCA has tossed in a CASL-generated interface option that translates *XVI* scripts without the need for modification. Also new is a background operations mode, but it consumes a whopping 320K—leaving enough to run *1-2-3* during file transfers but not much else. *Mk.4* still costs $245, upgrades are $65 for *Mk.4* users and $85 for *Crosstalk XVI* users. DCA, 1000 Alderman Dr., Alpharetta, GA 30201-4199; 800/241-4762. —*Eric Brown*

Crosstalk's dialing directory is first-rate.

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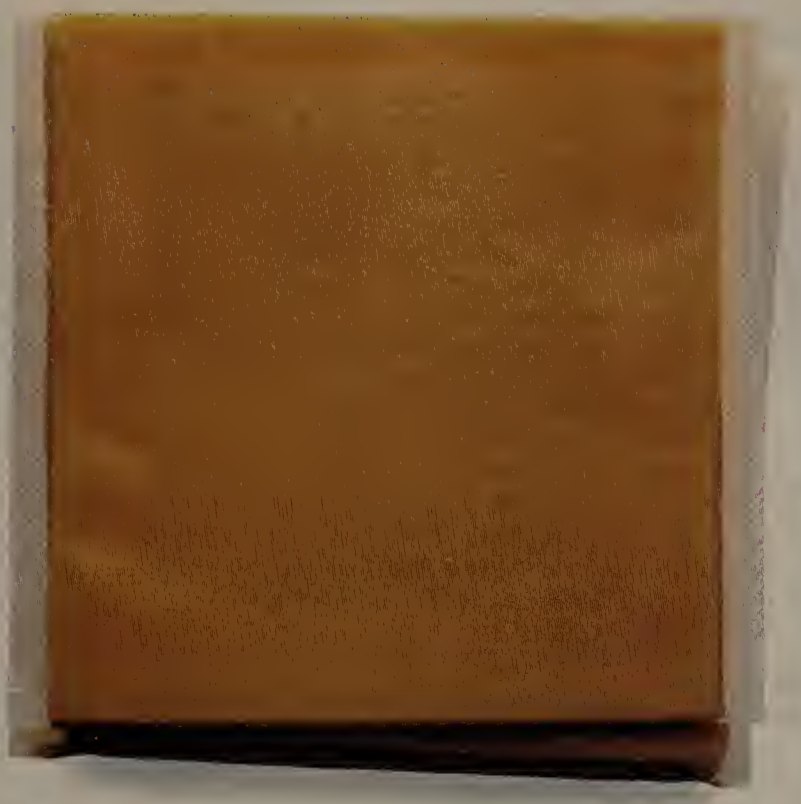

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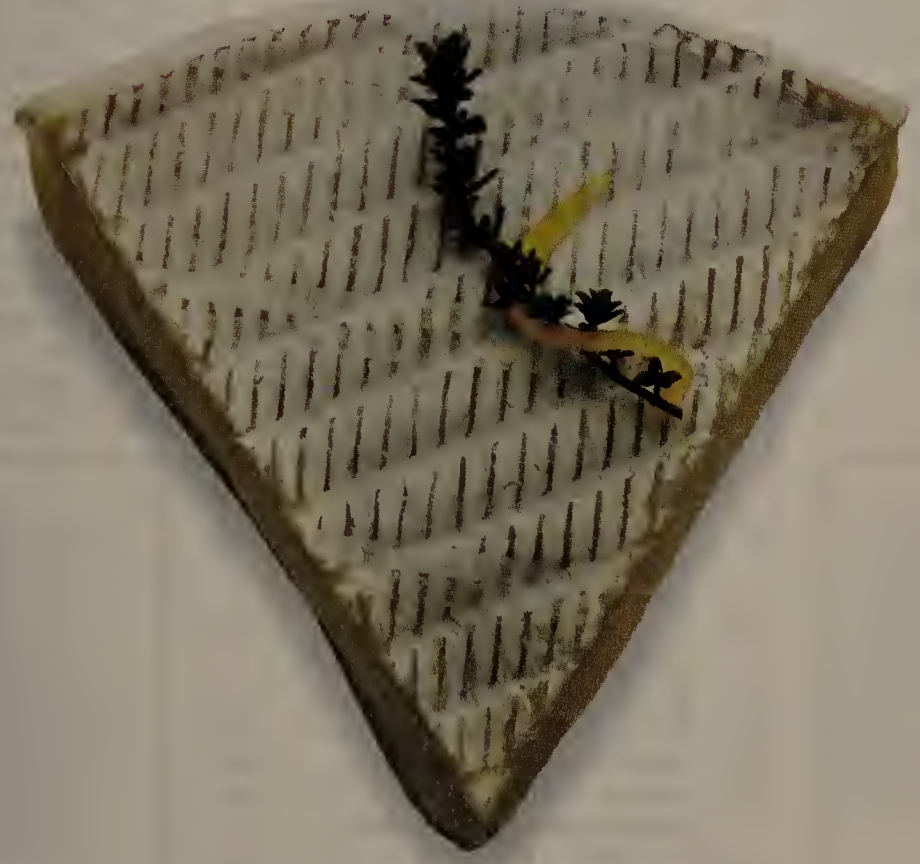

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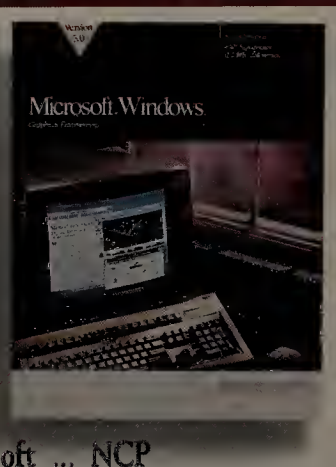

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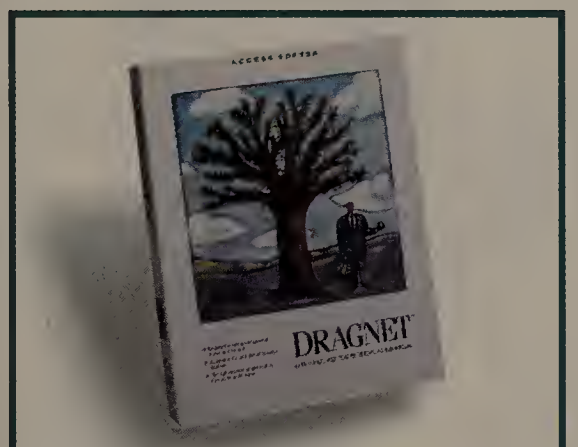

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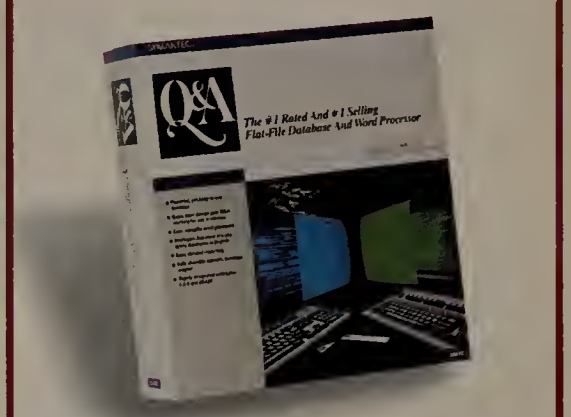

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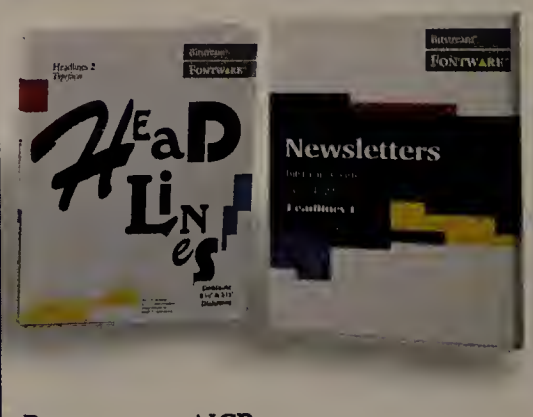

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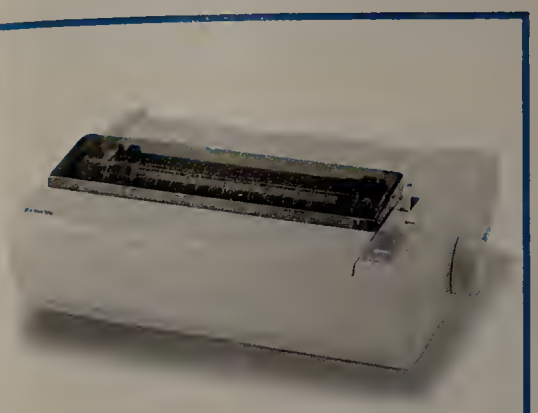

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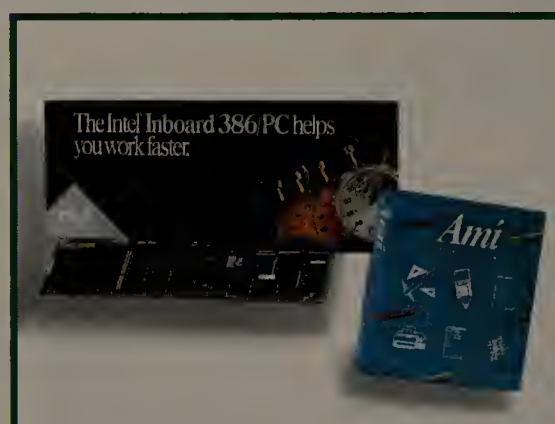

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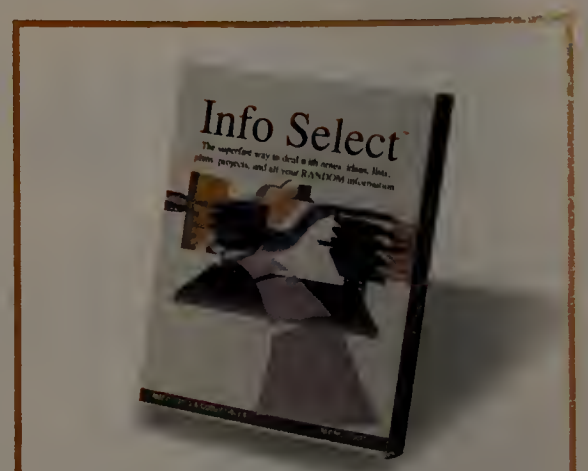

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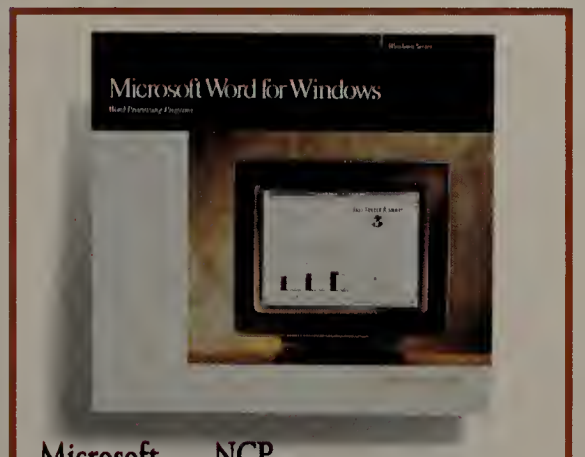

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SPECIAL SOFTWARE ISSUE

Software You Can Really Use

No matter what you do with your PC, a good collection of utilities makes life easier. For our Fourth Annual Software Review, PC World looks for the Best Buys in five leading categories—and PC Tools Deluxe is the runaway winner.

Utilities are real PC bargains. Choose a new word processor, spreadsheet, or data manager, and you may have to weigh software and retraining expenses for an entire department. But utilities are a matter of individual choice—low-cost personal accessories that deliver instant productivity regardless of your main application. As a special service to our readers, we've devoted this month's entire review section to utilities that help your applications run better, make your work go faster, and save your bacon when disaster strikes.

There are so many kinds of utilities, it would be hopelessly confusing to put them all in the same review—and quite unfair to compare them. To further complicate matters, while some products like *Calendar Creator Plus* are geared toward a single function, others like *Mace Utilities 1990* combine different kinds of features.

To help untangle the mess, the editors of *PC World* have divided the universe of PC utilities into five of the most important categories: disk utility libraries, DOS shells, disk optimizers, hard disk backup utilities, and personal schedulers. "Combo" products have been reviewed wherever their various features are pertinent; hence they may appear in more than one roundup. In fact, one such product, *PC Tools Deluxe 6.0,* is the clear champ of the issue, winning Best Buy status in four out of five roundups.

Disk utility libraries like *Mace, PC Tools,* and *Norton* provide disaster-recovery features to help you salvage an accidentally formatted hard disk, a hastily deleted file, a trashed directory, or a damaged DOS partition. They also deliver grab bags of extra features—everything from defraggers to file finders. Associate Editor Robert Lauriston evaluated the big three; a Best Buy citation was awarded to *PC Tools* for its powerful data recovery features plus a utility package that includes disk caching, backup, and desktop capabilities.

DOS shells like *The Norton Commander* and *XtreePro Gold* speed your work by providing a menu-driven interface to simplify DOS operations such as COPY and DEL. The good ones also include tools for finding, grouping, viewing, and manipulating both files and data in a variety of formats. Assistant Editor Lincoln Spector looked at eight shells; Central Point Software's *PC Tools* was cited as a Best Buy for its powerful file management capabili-

ILLUSTRATION OF COMPUTER BY BUD PEEN,
CREATED WITH COREL DRAW

ties and ease of use.

Disk optimizers like *SpinRite II* and *Optune* head off hard disk trouble by testing the disk surface for flaws, defragmenting files that DOS has scattered around the hard disk, and performing a few additional tricks. Associate Editor Michael Goodwin checked out nine optimizers. He found two products—*SpinRite II* and the Speed Disk module of *The Norton Utilities*—that were very strong in some areas. One Best Buy—the reasonably priced *Optune 1.2*—provided every important feature.

Hard disk backup utilities like *Fastback Plus* and *Norton Backup* are the best insurance against the inevitable day when your hard disk crashes. Writer John Walkenbach examined six fast, inexpensive, easy-to-use programs that can save your priceless data in case of hard disk disaster. Two Best Buys were awarded (for flexibility, a full feature set, and simplicity of use) to the PC Backup module of *PC Tools* and to *Norton Backup*.

Personal schedulers like *Complete Calendar* and *SideKick Plus* can be life preservers for business users trying to keep afloat in the rough seas of a busy schedule. These programs combine RAM-resident pop-up appointment calendars with convenient productivity features like automatic scheduling of regular meetings, bar charts that reveal blocks of free time, alarms that notify you of appointments, and so on. Senior Associate Editor Eric Brown compared five of the most popular packages. The Appointment Scheduler in *PC Tools* was awarded a Best Buy, thanks to its generous combination of capabilities (including unique extras like a to-do list and a conflict warning feature) and its impressive ease of use. And while *SideKick Plus* fell short of a Best Buy, Brown rated it nearly as highly as *PC Tools*.

In a world where we often end up paying big money for small value, utilities provide some of the smartest software buys you can find. Dig into this section and help yourself.

Software You Can Really Use #1

Brighter Than DOS: WindowDOS 3.0

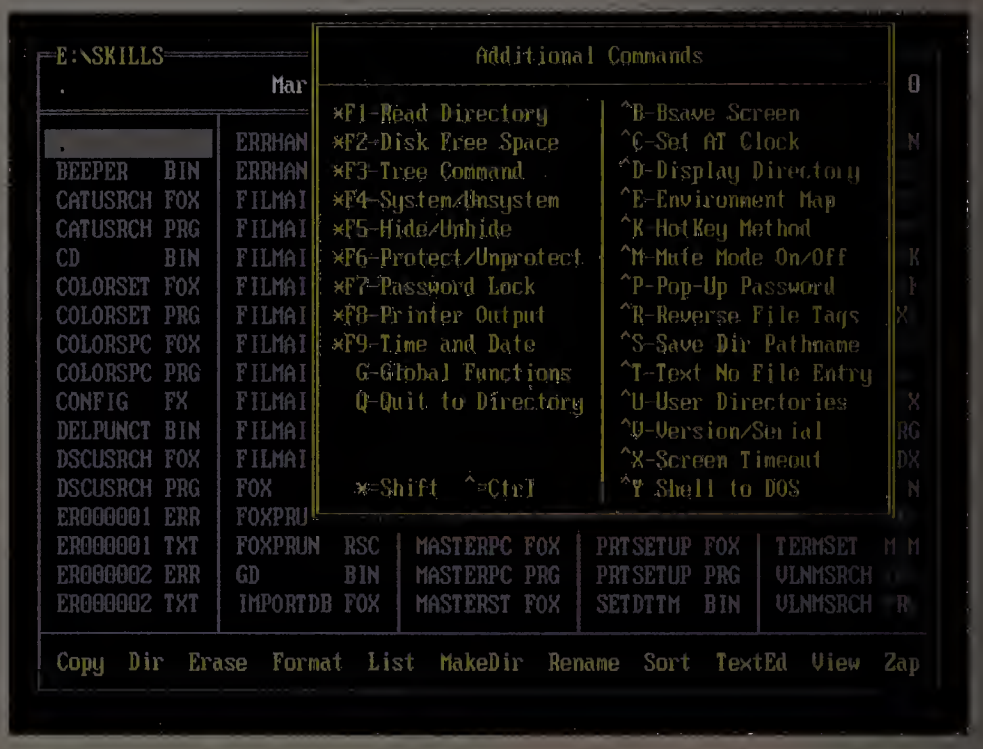
In droves they came and overwhelmed users. "No, please, not another DOS shell," we pleaded. "You'll love this one," said the programmers.

Often the packages that are supposed to shield us from DOS provide more protection than we need. *WindowDOS*, however, is a sharp utility that offers less than *Xtree*, *Norton Commander*, and *Q-Dos* but compensates with blazing speed and agility. The text editor is perfect for working on files up to 64K. A slick little screen-capturing program is built into the editor (it won't capture graphics, though).

WindowDOS's biggest advantage: It can act as a memory-resident utility. The RAM requirement is a hefty 58K, but the package is still suitable when you need an immediate route to critical file management. As an alternative, you can have ready access to *WindowDOS* as a stand-alone program with a simple batch file; on a 286 or better, this method will be more than acceptable for quick file management sessions. List price: $69.95. WindowDOS Associates, P.O. Box 300488, Arlington, TX 76010; 817/467-4103. —*Steve Bass*

Reader service no. 615

Steve Bass is president of the Pasadena IBM Users Group and a board member of the Association of Personal Computer User Groups.



Among DOS shells, WindowDOS stands out for its combination of memory-resident operation and speedy, straightforward control over basic system functions.

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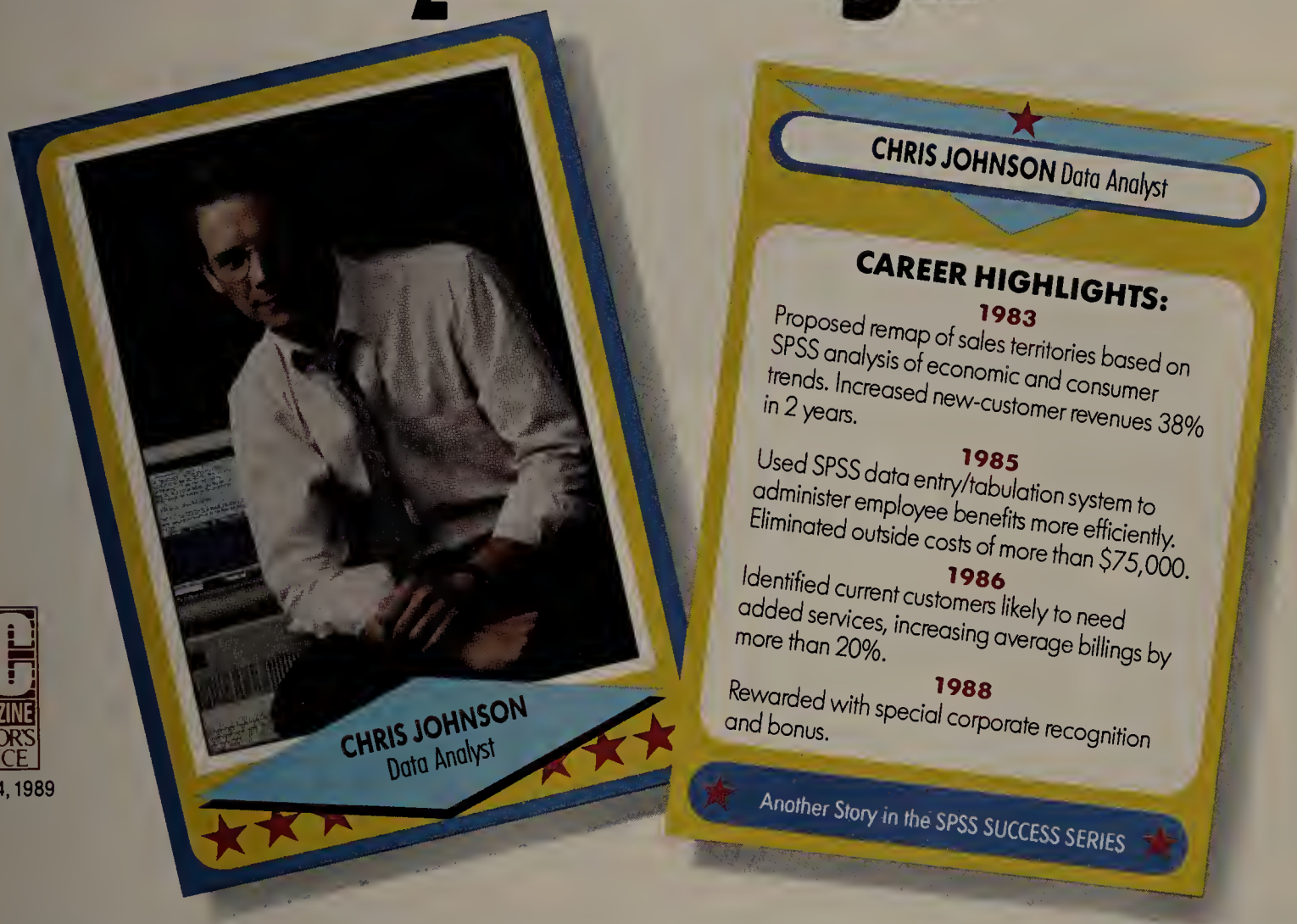

PC MAGAZINE EDITOR'S CHOICE
March 14, 1989

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Circle 252 on reader service card

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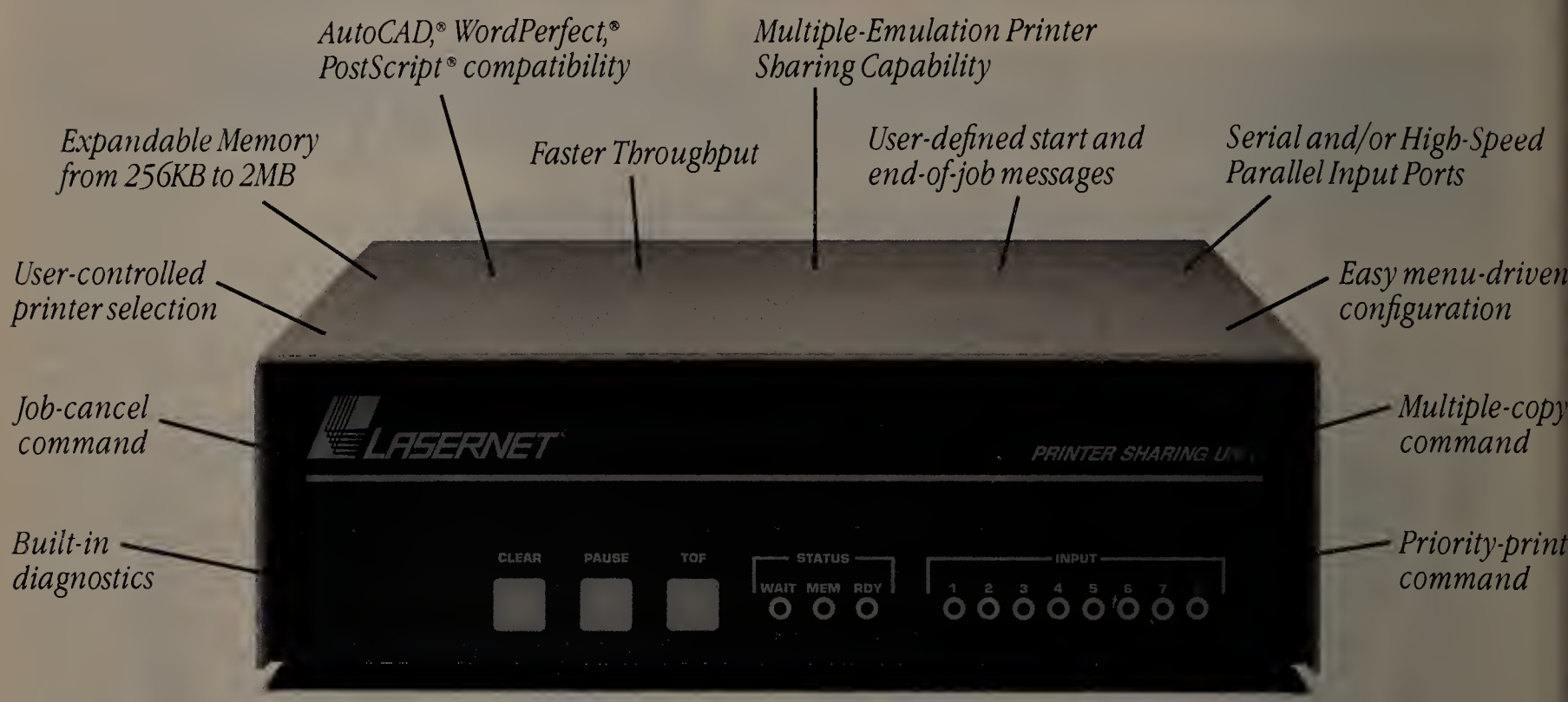

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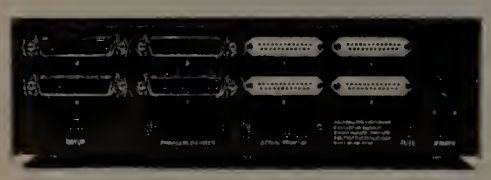

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Circle 325 on reader service card

Hard Disk Health Insurance

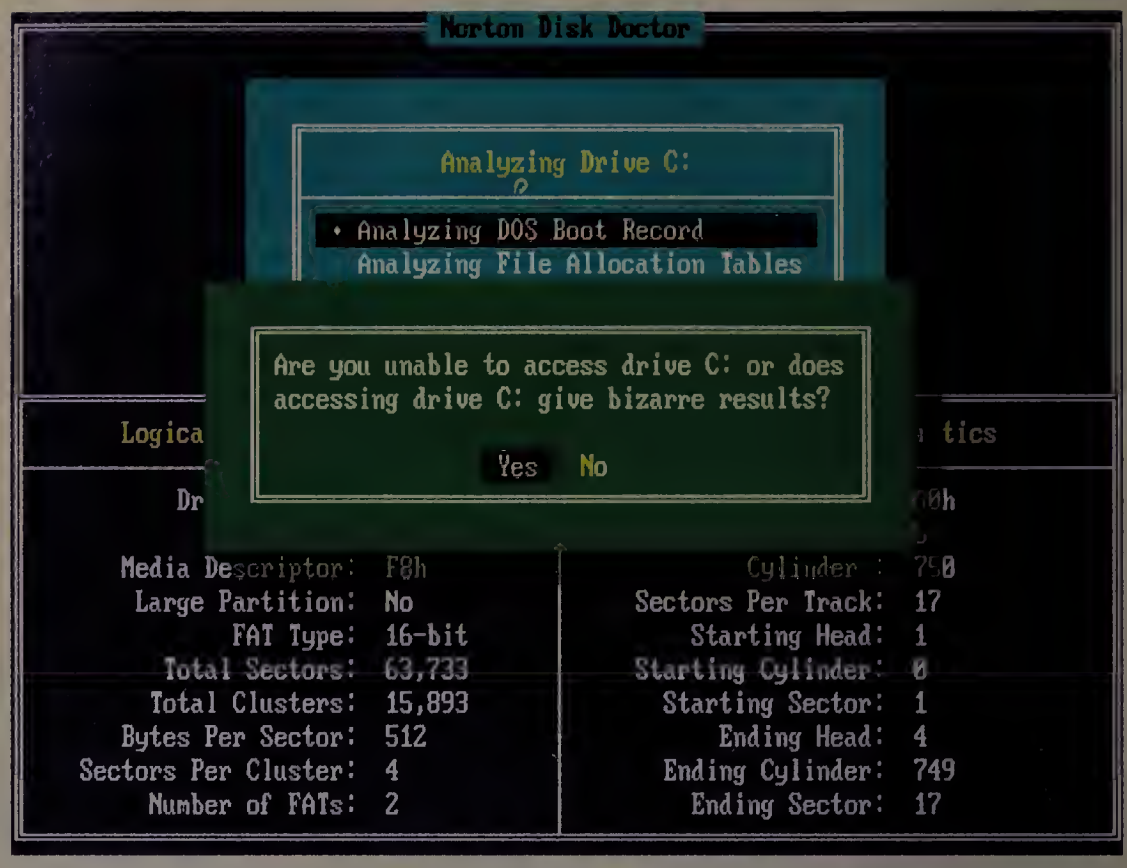
Mace, Norton, and PC Tools can nurse an ailing hard disk back to health. When disaster strikes, who should you call?

Robert Lauriston

ANDREA WISNEWSKI

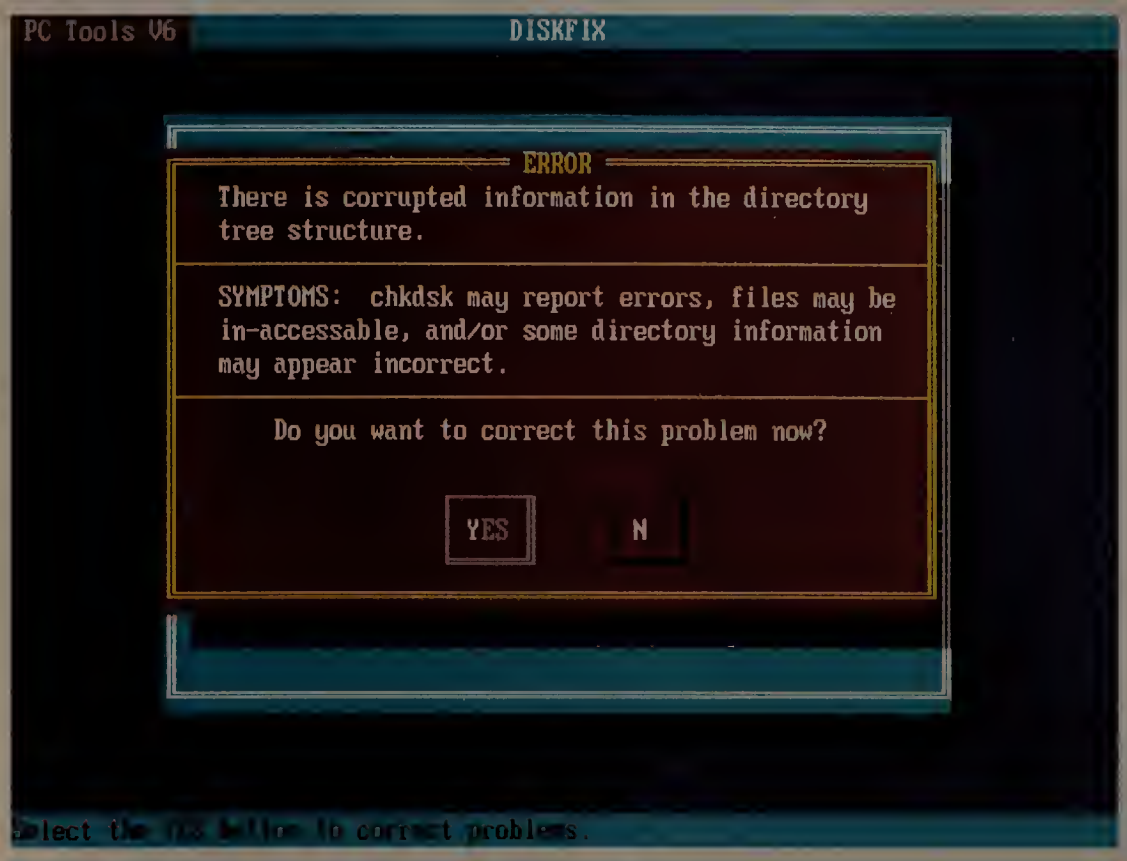
When you delete a crucial file by mistake, or a tired old hard disk suddenly refuses to boot, DOS can't help. That's when you need the special tools included in disk utility libraries.

Disk utilities have come a long way since the hard-to-use original version of *The Norton Utilities*, and they no longer require a crash course in DOS disk structures. All three of the popular utility libraries reviewed in this roundup—*Mace Utilities 1990*, *The Norton Utilities Advanced Edition 4.5*, and *PC Tools Deluxe 6.0*—sport menu-driven interfaces, diagnose common disk problems, and perform most recovery tasks automatically. Each also comes with a grab bag of ancillary utilities, from disk caching software to *SideKick*-style productivity tools.



Norton's Disk Doctor displays its friendly bedside manner when it detects damage to a drive's boot area.

Data recovery is the main reason people seek out these products, whether they need to undelete an individual file or to revive a sputtering hard disk. Whichever library you choose, remember that the sooner you install one, the better. *Mace*, *Norton*, and *PC Tools* add to your AUTOEXEC.BAT file a line that tells the library to save vital disk structure information at start-up, enabling you to restore even a badly trashed hard disk almost every time. Without this advance preparation, even the best recovery product can't guarantee deliverance from disaster.



Here, PC Tools' Diskfix utility has detected an overwritten FAT and asks whether it should repair the problem. If you say yes, it can usually restore the FAT automatically.

The Road to Recovery

The bad news is that most people reach for recovery tools after the fact. The good news is that for simple file recovery, it doesn't really matter whether you've prepared your drive beforehand—but it does matter which product you buy. In our undelete test, in which we deleted all the files in a subdirectory and then removed the subdirectory, both *PC Tools*—the Best Buy winner—and *Norton* undeleted files that *Mace* missed.

All three products' most amazing feat is the ability to resuscitate accidentally formatted hard disks—though it's not a pretty sight. Our unformatting tests on an unprepared drive revealed that none of the packages can restore files in the root directory. In addition, all subdirectories lose their names, are numbered sequentially, and are moved to the root.

Both *Norton* and *PC Tools* make it easy to rename subdirectories after unformatting. Both of those programs—but not *Mace*—can also make a damaged drive bootable again. *Norton* is the only program that lacks a prune-and-graft utility (which eases reconstruc-

FEATURES EVALUATION

PC Tools Does It All

In data recovery, PC Tools Deluxe matches Norton Utilities feature for feature, adds a backup utility for superior data protection, and tops it off with a broad variety of SideKick-style productivity features.

● Yes
○ No
◒ Deficient

	Mace Utilities 1990	The Norton Utilities Advanced Edition 4.5	PC Tools Deluxe 6.0
Standard features			
Price	$149	$150	$149
Menu-driven installation	●	●	○
Context-sensitive help	○	◒[1]	◒[2]
On-line tutorial	○	●	○
Mouse support	○	○	○
Data recovery			
Undelete files	●	●	○
Unformat hard disk	◒[3]	●	○
Unremove directory	●	●	○
Unformat floppy	◒[4]	◒[4]	◒[4]
Diagnose and repair logical errors	●	●	○
Repair damaged floppy	●	●	○
Make any disk bootable	○	●	○
Data protection			
Backup utility	○	○	○
Defragmenter	●	●	○
Disk test	●	●	○
Head-parking utility	●	○	○
Nondestructive FORMAT replacement	●	●	○
			BEST BUY

[1] Not in all modules.
[2] Not always available.
[3] If disk not previously prepared, must rename directories with sector editor.
[4] Only if formatted with special utility.

	Mace Utilities 1990	The Norton Utilities Advanced Edition 4.5	PC Tools Deluxe 6.0
Other disk utilities			
Prune and graft directories	●	○	○
Rename directories	○	●	○
Search disk for file	●	●	○
Search disk for string	○	●	○
Disk cache	●	○	○
Sort directories	●	●	○
Change file attributes	○	●	○
Change file date, time	○	●	○
Encrypt files	●	○	○
Erase disk completely	○	●	○
Erase file completely	●	●	○
Add comments to file list	○	●	●
Productivity utilities			
Appointment calendar	○	○	○
Auto-dialer	○	○	○
Batch file enhancements	○	●	●
Calculator	○	○	○
Communications (modem)	○	○	○
DOS shell	○	○	○
Flat-file data base	○	○	○
Keyboard speedup	●	●	●
Macros	○	○	○
System analysis	●	●	○
Timer	○	●	●
			BEST BUY

tion of the directory tree).

Mace, *Norton*, and *PC Tools* do more than just help you recover from human error. In an exhaustive series of diagnose-and-repair tests, we simulated a slew of glitches that might plague a failing drive. We overwrote portions of DOS's system files to make the disk nonbootable; rearranged the partition table so the system lost logical drives (drive D:, for example); and trashed the disk's File Allocation Table (FAT), which holds essential information about the names, sizes, and physical locations of files and subdirectories.

Changing DOS versions and sabotaging different bytes caused wide fluctuations in our diagnose-and-repair test results. Overall, *Norton* and *PC Tools* correctly diagnosed and repaired more problems than *Mace* did, and without sending us to the sector editor (a bits-and-bytes editor suitable for techies only; all three products offer one).

If you've installed any of these products in advance, restoring a damaged or accidentally formatted disk is usually a breeze. Unformatting or otherwise restoring prepared drives reclaims all

data up to the point when you last booted your machine. All three programs supplant DOS's FORMAT command with their own nondestructive routines that let you unformat floppies as well as hard disks.

These libraries offer other key tools for disaster preparedness as well. All provide defragmenters, which improve disk performance and reliability by consolidating files spread across far-flung sectors (see "Disk Trouble? No, Thanks!" in this issue for reviews of these packages' defraggers). To *Mace* and *Norton*'s shame, only *PC Tools* includes the most essential hard disk companion, a backup utility—and what's more, it's the Best Buy in our review "No-Excuses Backup Software" elsewhere in this issue.

Other bundled utilities have little to do with disk recovery and protection but are handy nonetheless. All the packages will search a disk for a file, for example, while *Norton* alone lacks a disk caching utility to speed disk performance. *PC Tools* also boasts a few top-flight productivity programs, including a DOS shell (which rates a Best Buy in this issue's review "Making DOS Manageable") and a Best Buy–winning personal scheduler (see "Playing for Time: Five Personal Schedulers," also in this issue).

Mace Utilities 1990

In *Mace Utilities 1990,* new owner Fifth Generation Systems has added an automatic disk repair utility and a directory prune-and-graft utility, and has improved the program's interface and manual. But the company also removed the backup utility found in *Mace Gold,* and the package's undelete capability falls below standard.

Mace's recovery capabilities are divided among a number of separate command-line utilities. Though all can be run from the program's main menu, using the command line is actually easier and offers better on-line help. In either case, troubleshooting requires constant reference to the poorly organized manual.

Mace's undelete capability is inferior; in the undelete test it was often unable to restore files that *Norton* and *PC Tools* handled with ease. In those cases, *Mace* prompted us to use the dreaded sector editor to track down and reassemble the files. A few mini-utilities are designed to help with this arduous task, but acceptable results are unlikely for anything other than text files.

When unformatting, *Mace* loses root directory files and subdirectory names, as do the other two products. Unlike *Norton* and *PC Tools,* however, *Mace* produced garbage files in the root and split some directories (which then had to be rejoined with the prune-and-graft utility). Moreover, to rename subdirectories, you must resort to the sector editor and edit the FAT directly.

Emergency Room, *Mace*'s diagnose-and-repair utility, has the unique ability to undo an unsuccessful repair attempt, so you're assured that it won't leave you worse off than before. However, *Mace* is also the only product reviewed here to lack a utility for making disks bootable—an important omission, because damaged drives often refuse to boot.

Mace includes a number of other disk and system utilities, including a mediocre defragmenter, an excellent disk test, and a so-so disk cache (see "Cache Values," February 1990). The one unique tool is a memory-resident utility that periodically copies the contents of RAM to disk, enabling you to restore data in memory after a crash or power failure. This safeguard might occasionally recover data that would otherwise be lost, but an automatic save utility running within an application is a more reliable solution.

Mace's prune-and-graft utility, ability to undo a repair, and unique RAM backup can't offset its negative aspects. Undelete and unformatting features that send you to the sector editor are

Software You Can Really Use #2

Faster Floppies: FloppyDriver 2.43

Is *fast floppy* an oxymoron? Not with *FloppyDriver,* a speed-up utility that increases drive performance by substituting its own floppy disk interface program. The increase is at least 500 percent—an absolute bonanza to laptop users. An added perk is *FloppyDriver*'s talent for formatting any size floppy in the background, so you can continue writing the great American novel.

You decide how much memory to allocate, anywhere from 18K to 45K. For most applications, 25K will boost performance dramatically. The program is well behaved and cooperates with other memory-resident programs. If it's the last program loaded into memory, it will unload from memory using a /u switch. If even 18K is a memory problem, you can load *FloppyDriver* before starting intensive floppy work and use the handy Unload feature when the project is done. Laptop users, however, will beg, borrow, or give up some other TSR once they've tried *FloppyDriver.* List price: $89.95. Dariana Technology Group, 7439 La Palma Ave. #278, Buena Park, CA 90620; 800/541-6579, 714/994-7400. —*Steve Bass*

Reader service no. 616

unacceptable, and the disorganized manual will slow you down. *Mace* stands as the least attractive of the packages reviewed.

The Norton Utilities Advanced Edition 4.5

The Norton Utilities Advanced Edition ties with top-rated *PC Tools* at undeleting files, unformatting drives, and recovering data from damaged drives. It also includes the best defragger available and a unique set of batch file enhancers. But it lacks a backup utility—the most crucial element in data protection—and offers fewer extras than the other two packages do.

All the individual utilities can be run from the command line or launched from *Norton*'s master menu, which offers a screenful of on-line help for each utility. The package also includes a comprehensive, 150-page troubleshooting guide covering a wide range of disk problems.

Norton's command-line undelete is straightforward, enabling you to select a file and restore it with a single command. The menu-driven method is less efficient: A utility scrolls through all the recoverable files in a directory, asking whether you want to restore each file and, if so, for the first character of the file's name.

The unformat routine produces the same results as *Mace*'s—without the garbage characters and split directories. You can quickly rename the numbered directories from *Norton*'s directory tree display, but there's no prune-and-graft utility to help in reorganizing the disk.

Norton bills its Disk Doctor utility as a panacea for disk ills. It quickly and accurately diagnoses and repairs such problems as missing partitions and bad FATs, and it asks for confirmation before the fix (context-sensitive help assists you in making the right choice). Disk Doctor can even make a disk bootable when DOS says there's 'no room for system on destination disk'.

EXECUTIVE SUMMARY

Utility Libraries to the Rescue

Three utility collections help recover lost data and protect you from hard disk disasters

When you accidentally delete a file or format a drive, or if you suddenly lose drive C:, where do you turn? Probably to one of the three leading disk utility libraries. In addition to providing automatic data recovery, all three offer data protection tools to prevent data loss in the first place. A miscellaneous assortment of disk and productivity utilities increases the packages' usefulness.

BEST BUY

PC Tools Deluxe 6.0 earns a Best Buy, thanks to top-notch data recovery tools plus solid backup, disk-test, and optimizer utilities. But that's not all—its comprehensive bundle of productivity utilities (including a Best Buy–winning appointment calendar and DOS shell) make it the hottest bargain around.

	Mace Utilities 1990	The Norton Utilities Advanced Edition 4.5	PC Tools Deluxe 6.0
Data recovery	Good	Excellent	Excellent
Data protection	Fair	Fair	Excellent
Other disk utilities	Fair	Fair	Excellent
Productivity utilities	Poor	Fair	Excellent
Ease of use	Fair	Good	Good
Overall value	Fair	Good	Excellent
			BEST BUY
Reader service no.	680	681	612

How we rate disk utility libraries
We rate disk utility libraries based on information in the Features Evaluation table and *PC World* tests, combined with our opinions of quality, reliability, ease of use, and user benefit.

Data recavery is the main reason people buy disk utility libraries. To earn an Excellent rating, a package must reliably perform undelete, unformat, and general disk repair tasks under a variety of conditions without demanding technical expertise. Undelete has extra weight, as it's the most common recovery task.

Data pratectian refers first and foremost to automatic disk-structure backup and nondestructive formatting. Because most products do equally well at these tasks, an Excellent rating also requires a good backup program, a superior disk defragmenter, and a reliable set of disk-test utilities.

Other disk utilities pertains to a wide variety of hard disk tools. The abilities to prune and graft directory branches and to rename directories receive the most weight; they make rebuilding a trashed disk much easier. A program that also includes a good disk cache, superior file and text searching, and the ability to perform a variety of file and directory chores receives an Excellent rating.

Productivity utilities are the icing on the cake. They run the gamut from DOS shells to batch file enhancements to appointment calendars. Each extra is measured against its stand-alone equivalents; having three major, high-quality productivity utilities results in an Excellent rating.

Ease af use is an aggregate rating that applies to all the other criteria. Excellent ratings are awarded to programs that deliver automatic diagnosis, recovery, and protection—and provide menu-driven access to these functions, augmented by clear messages and context-sensitive help.

Overall value averages all af the above criteria, with special emphasis on the all-important data recovery features.

Norton includes an unbeatable defragmenter and a good disk test-and-repair routine. A set of nifty programs reinforces *Norton*'s appeal to command-line aficionados, letting you enhance your batch files with color, ASCII graphics, the ability to accept keyboard input, and more. A menu-driven control center lets even novices adjust cursor size, keyboard speed, serial port settings, and system time and date. Other goodies include timers, a text file print formatter, and a variety of file manipulation tools.

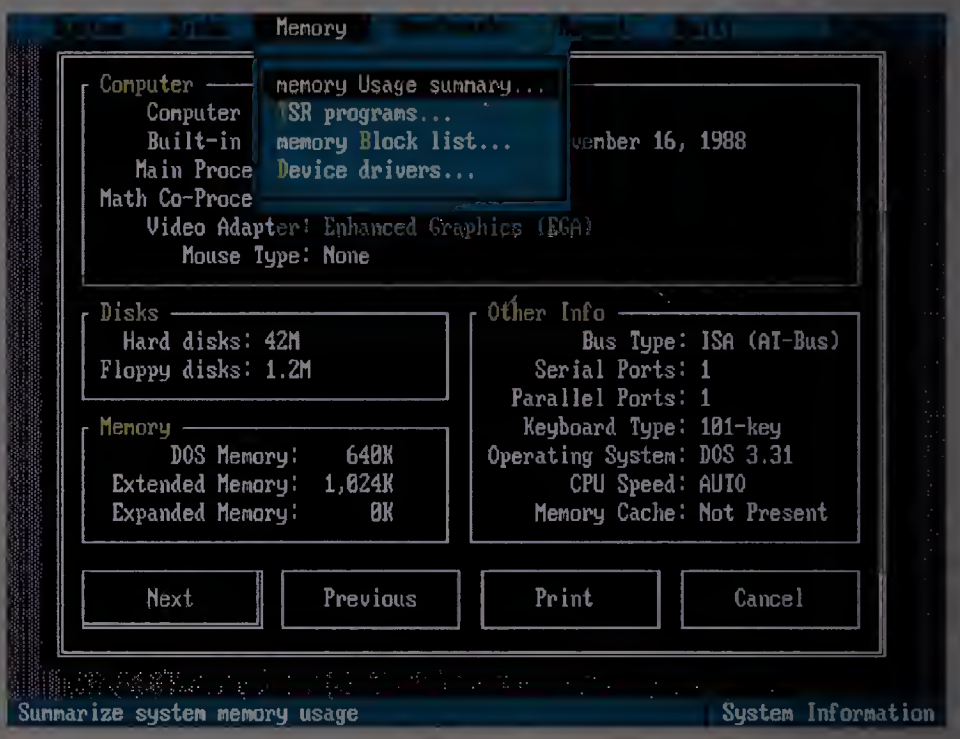
Norton was once tops at undeleting, unformatting, and general diagnosis and recovery, but the latest version of *PC Tools* is just as good, forcing you to weigh other factors in making a buying decision. *Norton* has the better defragger, and the command-line tools and

A NEW LOOK FOR NORTON: UTILITIES EVEN A NOVICE CAN LOVE

Lincoln Spector

A mojor upgrade of *The Nartan Utilities* with mouse support, a menu-driven interface, ond other new feotures should be shipping by the time you reod this. If the program lives up to its promise, *Norton* will be accessible ta many mare users.

With *Norton Utilities 5.0*, mast of the constituent utilities naw have look-alike menus resembling thase af *The Nartan Commander* ond *Nartan Backup* (see "Making DOS Manageable" ond "Na-Excuses Backup Saftware" in this issue). Moreover, o new main menu lists ovailable functians ('Format a 360K disk') insteod of programs ('SF Sofe Farmot') as the older version did. For those used to *Norton*'s old woy af daing things, command-line switches still ollaw you to run most af the pragroms in batch mode fram the DOS prampt.



The Norton Utilities 5.0's System Information program is now menu-driven and offers nearly twice the information of the previous version.

All af the unerase functians, as well os some new anes, are naw cambined in one menu-driven pragram. Because it understonds the structure of *dBASE* and *1-2-3* files, this program is better able ta motch scattered sectors when undeleting these files. The file-find and text-seorch utilities hove olso been combined inta o single progrom.

The disk diognostic taals hove been considerably improved. *Nartan* can naw do read/write tests os well as interleaving and law-level formotting. The optimizer con shaw you which file is occupying o given cluster. Diognastic tests con be set up to run outomotically, with quick tests every day and complex ones every week.

Mony of the other taols have olso changed. The System Infarmotion program affers o number of informative screens, including o memary map ond netwark benchmarks. The Norton Cammond Center lets you sove system settings (such as colar ar cursar speed) ond load them fram botch files. A new security pragrom creotes ond password-pratects virtuol drives.

***Norton Utilities* has lang been considered a program for techies. If versian 5.0 does everything it promises, it may gain a bigger follawing among novices.**

Lincaln Spector is on ossistant editor for PC World.

WHERE TO BUY

Norton Utilities 5.0
Peter Norton Computing, Inc.
100 Wilshire Blvd., 9th fl.
Santa Monica, CA 90401
213/319-2000
LIST PRICE: $189
REQUIREMENTS: 384K, DOS 2.0 or later version
TECHNICAL SUPPORT: toll number, M–F 8:30–5
OTHER SUPPORT: CompuServe BBS
Reader service no. 682

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Tom Bigley & Glen Tapanila, InfoWorld, May 8, 1989.

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batch enhancers will charm old DOS hands. However, it lacks the all-important backup utility, and you won't find a DOS shell or a personal scheduler. *PC Tools* has all three, making it a much better deal.

PC Tools Deluxe 6.0

PC Tools Deluxe 6.0 is not only as effective as *Norton* at all forms of data recovery, it's also easier to use. In addition, *PC Tools'* appointment calendar, backup utility, and DOS shell merit Best Buy ratings on their own, and the program's backup, defragging, and disk test-and-repair utilities aren't too shabby either. You also get a calculator, a *dBASE*-compatible flat-file data manager, and more—all for only $149. Does that add up to a Best Buy? You bet it does.

PC Tools augments its undelete feature with a memory-resident utility that tracks names and sector allocations of deleted files and directories on the fly. In theory, this should improve your chances of recovering fragmented files, but our tests showed *PC Tools* and *Norton* to be equally adept at that task. In addition, the feature slows down deletion; the only perceptible benefit is that you don't have to type in the first character of an undeleted file in order to recover it.

On unprepared drives, *PC Tools'* unformatting routine produced results that matched *Norton's* exactly. However, the one-two punch of easy directory renaming and a prune-and-graft utility makes reconstruction easier than with the other packages. A utility is provided to make disks bootable again.

PC Tools' Diskfix utility copies *Norton's* simple question-and-answer approach to diagnosis and data recovery. Though Diskfix has no context-sensitive help, the program's messages are exhaustive and tell you everything you need to know when deciding how to respond. There's one unique data protection feature: *PC Tools* can back up and restore disk partition data on a floppy.

With its Best Buy–worthy appointment calendar, backup utility, and DOS shell, PC Tools 6.0 is four Best Buys in one.

The lavish utilities bundle is one of a kind. It includes a new disk cache that Central Point claims is faster than that of Best Buy–winning *PC-Kwik*. It outdoes every *SideKick Plus* module—for instance, *PC Tools'* notepad has a spelling checker, and you get a programmable, *dBASE*-compatible data manager instead of just a name–and–phone-number list. On top of that, there's a communications program that includes menu-driven scripts for MCI Mail, CompuServe, EasyLink, and Central Point's own BBS, and even a fax manager (fax board not included).

PC Tools handles all major data recovery, disk management, and productivity tasks—and remarkably, it does all of them well. With its Best Buy–worthy appointment calendar, backup utility, and DOS shell, it's four Best Buys in one.

Prevention Is the Cure

PC Tools is clearly the pick of the pack. Not only are its recovery features excellent, but it's a good value even if you need only one or two of its top-notch utilities. If you can use several, or want an all-in-one solution, it's a super buy.

Norton Utilities has fewer productivity tools, but the program is equally adept at data recovery. Its command-line options and batch file enhancers make it more appealing to hard-core DOS fans. Release 5.0 (which should be shipping by the time you read this) could send this program leapfrogging ahead of *PC Tools* in data recovery (see the sidebar "A New Look for Norton: Utilities Even a Novice Can Love").

In either case, don't wait for an emergency to force you to buy—install *PC Tools* or *Norton* now. Full recovery from hard disk disaster is possible only if you have safeguarded your drives ahead of time.

Robert Lauriston is an associate editor for PC World.

For more information about all products in this article, circle reader service no. 908.

WHERE TO BUY

Mace Utilities 1990
Fifth Generotion Systems, Inc.
10049 N. Reiger Rd.
Boton Rouge, LA 70809-4559
800/873-4384, 504/291-7221
LIST PRICE: $149
REQUIREMENTS: 256K, DOS 2.0 or loter version
TECHNICAL SUPPORT: toll number, M–F 7–7
OTHER SUPPORT: in-house BBS
Reader service no. 680

The Norton Utilities Advanced Edition 4.5
Peter Norton Computing, Inc.
100 Wilshire Blvd., 9th fl.
Sonta Monica, CA 90401
800/365-1010, 213/319-2000, 213/458-2048 (fox)
LIST PRICE: $150
REQUIREMENTS: DOS 2.0 or loter version
TECHNICAL SUPPORT: toll number, M–F 8:30–5
OTHER SUPPORT: CompuServe BBS
Reader service no. 681

PC Tools Deluxe 6.0
Central Point Softwore
15220 N.W. Greenbrier Pkwy. #200
Beoverton, OR 97006
503/690-8090
LIST PRICE: $149
REQUIREMENTS: 512K, DOS 3.0 or loter version
TECHNICAL SUPPORT: unlimited, toll number, M–F 8–5
OTHER SUPPORT: in-house BBS
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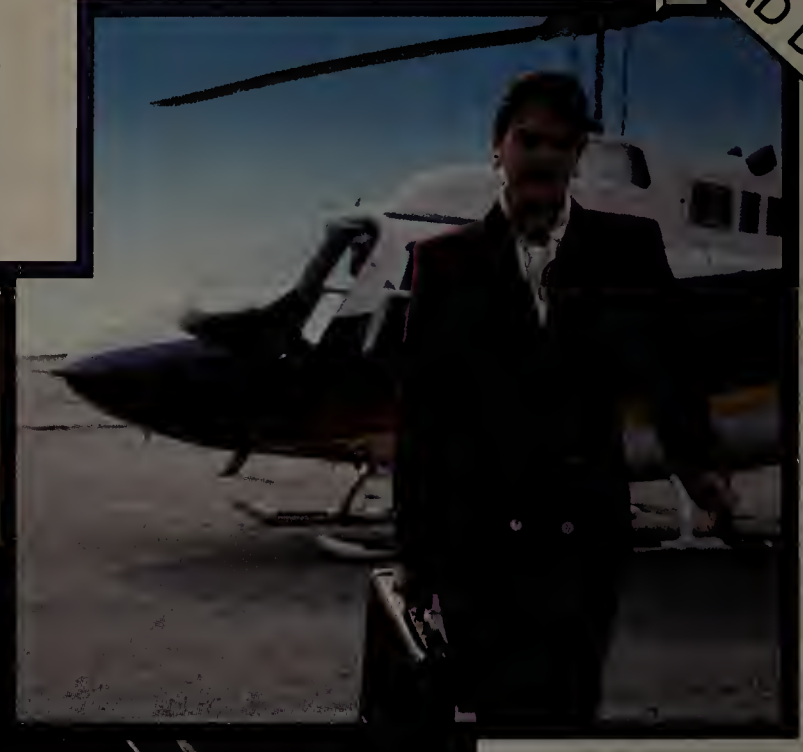

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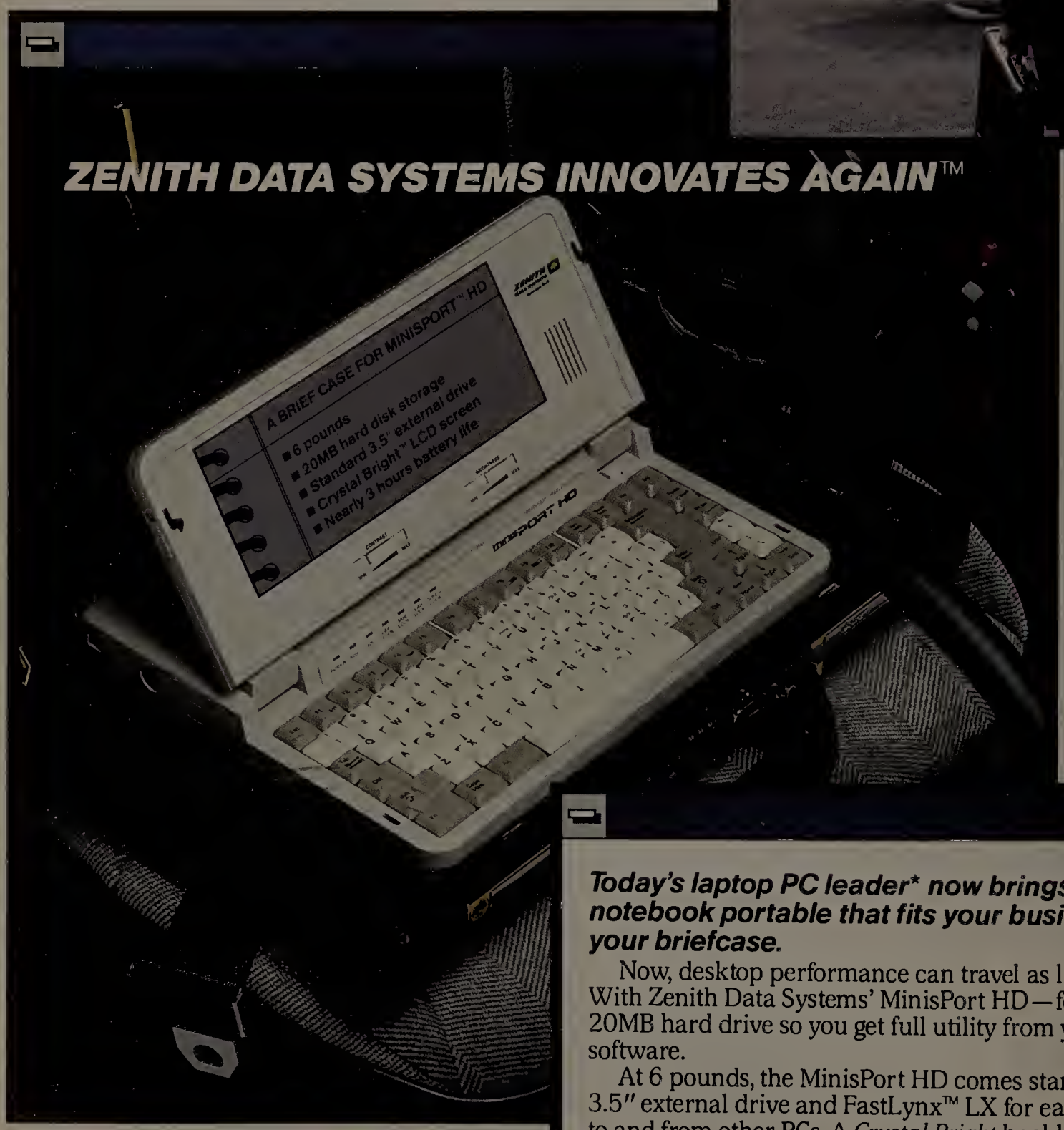

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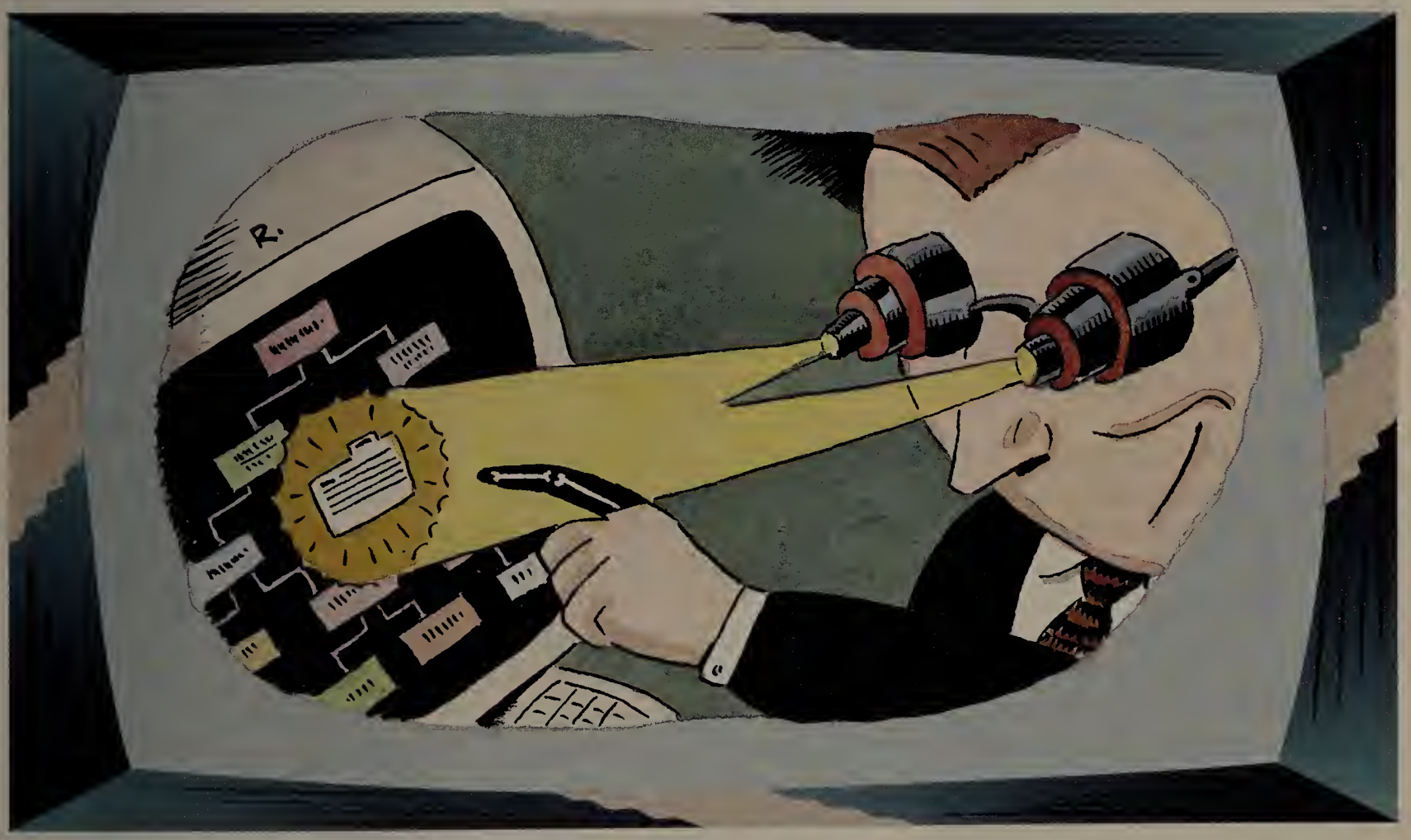
Making DOS Manageable

The best DOS shells don't just hide the C> prompt—they give you a crystal-clear window into your files.

Lincoln Spector

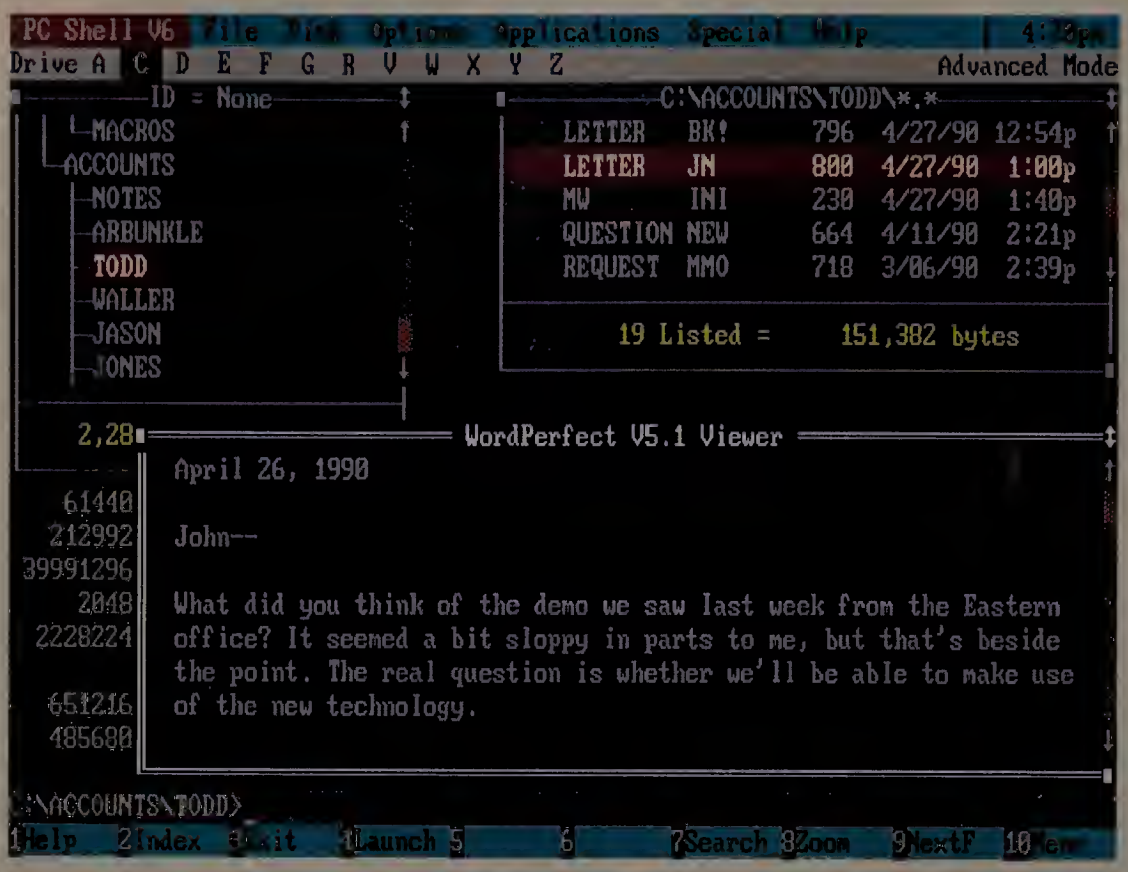


MARC ROSENTHAL

A DOS shell can do more than add an easy-to-use, menu-driven interface to the operating system. As tools for finding, grouping, searching, and examining data from multiple directories and applications, the better shells let you treat your files as information, not just as the by-products of one program or another. You can, for instance, list all the files on your hard disk that contain a particular word, then examine the contents of a file in a separate window. If you need to edit a file, you can press a key to bring it up in its original application.

Such capabilities don't free a shell from its basic tasks: listing files in the current directory and performing such basic DOS jobs as copying files and creating subdirectories via easy-to-use menus. In recent years, most shells have added tree diagrams of a disk's directory structure for quick access to any directory. In day to day use, these basic features are as important as the glamorous ones.

This roundup examines eight DOS shells: Bourbaki's *1dir+ 3.03*, Athena's *Disc Director 1.06*, Lotus's *Magellan 2.0*, Peter Norton's *Norton Commander 3.0*, Central Point's *PC Tools Deluxe 6.0*, Soft Shell's *SoftBreeze 3.0*, the Aldridge Company's *Tree86 3.2*, and Xtree's



PC Tools Deluxe's resizable, movable windows let you view a file full width in a horizontal box.

XtreePro Gold 1.4. *PC Tools Deluxe* wins Best Buy honors for delivering superb file-reading and file-handling capabilities in an easy-to-use package.

What a Good Shell's Made Of

Ease of use and good file-handling capabilities are important considerations when buying a shell. If you must hunt through badly organized menus to find the command you need, or if you can't tag all files that have the same extension, you might as well use DOS. But if you want to group and examine data from multiple applications, you'll need a shell that can group files from various directories, display files as they appear in their original applications, and launch applications from a data file. The following guidelines tell you what to look for.

Ease of Use Fancy features don't relieve a DOS shell of its basic job: making DOS easy to use. A good shell offers a readable list of files and a tree diagram of a drive's directory structure. Commands should be visible on screen or in logically named menus. Mouse support is also important. *Norton Commander* and *PC Tools Deluxe* are the easiest programs to use, while *1dir+* and *XtreePro Gold* are the hardest.

All of the shells reviewed offer some sort of access to the DOS prompt for the times you'd rather do something the old-fashioned way. Most let you leave the shell temporarily and return to a standard COMMAND.COM screen. A variation improves the DOS screen with an editable command line and a stack of previous commands that you can repeat easily.

In a better approach, a shell's menus and windows share the screen with the DOS command line. Shells with this feature, such as *1dir+*, *Norton Commander*, and *PC Tools Deluxe*, almost always include a command stack. Most of them let you easily copy the currently selected file name onto the command line, a convenient option when you're including a file name in a DOS command.

File Handling All the shells let you easily copy, move, and delete files as well as tag individual files so you can work on them as a group. The better ones let you tag groups of files by file name, wild cards, date, or other criteria. The ability to reverse the tags, so that all untagged files become tagged and vice versa, is also desirable.

Some shells allow you to prune (delete) and graft (move) a branch (a directory, its subdirectories, and all the files within). The long file names in *Disc Director* and *SoftBreeze* can help users who aren't comfortable with DOS's eight-character limit. If you're on a LAN, you'll want a shell that can read a remote drive as easily as a local one. Only *Disc Director* and *Norton Commander* had problems reading remote drives.

User-Defined Lists There's no cross-referencing with DOS directories. If you have one directory for a given client and another for projects due Wednesday, for example, a file cannot be in both of them. Some applications make things worse by insisting on storing files in certain subdirectories. With seven of the shells, you can get around these problems by listing files independent of their directories. With some, you can enter a file name with wild cards and list all the files on a disk that match it. With others, such as *Magellan*, the definitions can become quite complex: You can list every file that matches, or fails to match, one of several file names with wild cards; is in one or more selected directories and branches; was created in a given month; and contains a particular word. With such complex definitions, you'll want a shell that lets you save them for future use.

File Viewers All the shells let you view files in ASCII format, but some files are practically unreadable in ASCII. Several offer better ways to view files from popular applications, so that *1-2-3*, *dBASE*, and *WordPerfect* files, for example, are easily readable. Shells should be able to display files both full screen or in a window next to a file list, allowing you to see the contents of the files as you move through the list.

Application Launching After you've looked at a file, you might want to use it

DOS Shells Let You Group, Examine, and Copy Files

Best Buy PC Tools Deluxe offers the best balance of standard and advanced features, while runner-up Magellan lacks mouse support, a proper directory tree, and easy DOS command-line access.

● Yes
○ No
◒ Deficient

	Disc Director 1.06	Magellan 2.0	The Norton Commander 3.0	1dir+ 3.03	PC Tools Deluxe 6.0	SoftBreeze 3.01	Tree86 3.2	XtreePro Gold 1.4
Standard features								
Price	$79	$139	$149	$95	$149	$99	$89.95	$129
RAM required	512K	384K	256K	256K	512K	512K	180K	256K
Resident RAM portion	7K	6K	13K	8K [1]	10K	32K	5K	3K
Reads network drives	○	●	◒ [2]	●	●	●	●	●
Adjustable window sizes	○	●	◒ [3]	○	●	○	○	○
Mouse support	●	○	●	●	●	●	●	●
File handling								
Directory tree	●	◒ [4]	●	●	●	●	◒ [5]	●
Prune and groft directories	●	●	○	○	●	○	●	●
Long file names	●	○	○	○	●	●	○	○
Tag files by name	○	●	●	●	●	○	◒ [6]	◒ [6]
Tag files by contents	○	●	○	○	◒ [6]	○	◒ [6]	●
Tag files by date/time	○	○	○	●	●	○	◒ [6]	◒ [6]
Reverse tags	○	●	○	○	●	○	●	●
User-defined lists								
Specific multiple directories	○	●	○	●	●	○	◒ [6]	●
Across bronches	●	●	○	●	●	○	◒ [6]	◒ [6]
Across entire disk	●	●	○	●	●	●	●	●
Filtered by file nome and extension	◒ [7]	●	●	●	●	●	●	●
Filtered by date	●	●	○	●	●	●	◒ [6]	◒ [6]
Filtered by contents	●	●	○	○	●	○	●	●
Save list definition criteria	○	●	○	●	●	●	○	○
File viewers								
dBASE	○	●	●	○	●	○	○	●
1-2-3 release 2	○	●	●	○	●	●	○	●
WordPerfect/Microsoft Word	○	●	●	○	●	○	○	●
PKZIP	●	●	○	○	●	○	○	○
PCX	○	●	●	○	●	○	○	○
Paradox	○	●	●	○	●	○	○	○
Microsoft Excel	○	●	●	○	●	○	○	○
Application launching								
From progrommable menu	●	●	●	●	●	●	○	●
From data file	◒ [8]	●	●	○	●	●	○	●
DOS command-line access								
DOS command line on screen	○	○	●	●	●	◒ [9]	○	○
File names copied to DOS commond line	○	○	●	●	●	○	○	○
DOS command stack	○	○	●	●	◒ [10]	●	●	●

BEST BUY

[1] 8K with EMS; 42K withaut; nane with menu-launched applicotian.
[2] Frequent delays while remote disk is rescanned.
[3] Limited number af sizes.
[4] Displays anly current directory ond its subdirectaries.
[5] Can't show tree and file list tagether.
[6] Nat directly supported but possible.
[7] Lists filtered by name cannat be directory specific.
[8] Must enter applicatian name each time.
[9] At main menu but nat in file manager.
[10] DOS cammand lines nat fully editable.

in the original application. Most of the shells here can load an application when you select a data file created in it, although—depending on your applications—you may have to teach the shell to recognize what files go with what. All the shells but *Tree86* allow you to create a menu of applications, so that you can easily launch one from any directory. Every shell lets you run a program by selecting the executable file.

When you run an application inside a shell, you want the shell to occupy as little RAM as possible. All these shells can make themselves scarce; when you load a program from within a shell, only a small portion remains in memory. *XtreePro Gold* has the smallest resident portion, 3K, although it's possible to load an application in *1dir+* so that the shell is removed completely.

If you merely want a menu-driven way to copy files, these programs are overkill. Countless other shells, most smaller and easier to use, are available. Many of the best simple shells are distributed as shareware; the *PC-SIG Encyclopedia of Shareware* (PC-SIG, Sunnyvale, California, 1989) lists 20 of them. If you're using DOS 4.0, you may not need to buy a shell, since one is included with the operating system. But if you want a tool that can help you group, search, and examine files, read on.

Disc Director 1.06

Athena Software's *Disc Director* offers a well-designed interface and superior directory manipulation tools. Unfortunately, it's underpowered in many respects.

Overall, *Disc Director*'s interface is well designed, with a screen that displays plenty of information without becoming unreadable. However, mouse support is abysmal; all you can do is scroll lightbars, and these move very slowly.

When it comes to manipulating branches and directories, *Disc Director* is one of the best. The initial screen lists data on each directory, and there's an entire menu of branch operations. *Disc Director* also offers long file names.

The user-defined listing options are limited. You can create a list of files by name, contents, date, size, attribute, or long file name contents. You can also list all files with duplicate names or those inside ARC and ZIP archive files. But you can't combine these criteria for more complex searches, as you can in many of the other shells. Furthermore, user-defined lists are always sorted by name; you can't sort by date, extension, or other criteria. Tagging is extremely limited: You can tag only one file at a time; there are no options to tag by group.

The text search feature is well designed and very fast. It displays each find within a file, then asks if you want to continue and whether the file should be added to a user-defined list. Application-launching features are unspectacular, as you have to identify your application every time you launch from a data file. With the exception of PKZIP files,

VIEWLINK: AN ORGANIZER, NOT A SHELL

Traveling Software's *ViewLink* was never meant to be a DOS shell, nor can it truly function as one—it can't even list the files in a directory easily. Nonetheless, this $149.95 product was the first to offer a very attractive DOS shell feature: the ability to create file listings based on user-defined criteria.

This unconventional hard disk organizer encourages you to group files by contents, dates, names, originating applications—anything but the DOS directory method. To rearrange your file system by contents, for example, the program will search all files for the keywords or phrases that identify different aspects of your work. *ViewLink* creates lists based on those search criteria.

Files that appear simultaneously on different lists provide the links between lists. For example, if you selected a file on the Contacts list, *ViewLink* might inform you that the same file also appears on the Carrier and Payables lists, which are only a keystroke or two away. The idea is to turn a hard disk full of applications and files into a unified environment that's tailored to your work style.

For all *ViewLink*'s strength in grouping files, it fails miserably at showing them. Since it lacks the application-specific viewers offered by such products as *Magellan* or *PC Tools*, seeing the contents of your files means loading your application—a time-consuming task—when a generic ASCII viewer won't do.

Many users would be uncomfortable losing DOS's directory metaphor entirely; others might balk at *ViewLink*'s lack of a quick, clean view of anything but ASCII text. For most of us, a true DOS shell that augments rather than ignores the directory structure will prove more practical. But adventurous types willing to experiment with new ways to link data may find *ViewLink* to their taste. —*L. S.*

WHERE TO BUY

ViewLink
Traveling Software
18702 North Creek Pkwy.
Bothell, WA 98011
800/343-8080
LIST PRICE: $149
REQUIREMENTS: 384K, DOS 2.0 or later version
TECHNICAL SUPPORT: unlimited, toll number, M–F 8–5
OTHER SUPPORT: none
Reader service no. 609

files are displayed in unformatted ASCII, showing you a lot of garbage with your text.

Disc Director works only with local drives; network drives are off-limits. This program has some nice features, but *Magellan, PC Tools,* and *Tree86* do it all better.

Magellan 2.0

When it comes to user-defined file lists, application-specific viewers, and text search, Lotus's *Magellan* stands head and shoulders above the competition. Unfortunately, its interface is not among the best. Still, if you work with data from a great many applications, *Magellan* is a good choice.

Magellan's interface is hampered by its lack of a true directory tree. Lotus describes its directory navigation capability as a tree, but it's not—you can move only one directory at a time. The screen display is clumsy and not very configurable, with overlapping file-list and view windows that are always getting in each other's way. And *Magellan* is the only program in the roundup that lacks mouse support.

By contrast, the user-defined lists are the best among the products reviewed. Criteria can include one or more directories or branches, file names, dates, or text strings, or any combination of the above. When you include a text string as a list criterion, *Magellan* uses indexes to speed the search. The penalty for indexed searches is a loss of disk space—an index uses an additional 3 to 20 percent of the disk space used by the indexed files. There's also a way to search files for content—independent of defining lists—that doesn't require an index. One plus: *Magellan* searches are fuzzy, finding near matches as well as exact ones.

Magellan's list of viewers is extensive. *Magellan* also contains a version of the *PKZIP* archiving program integrated into its own menus. While other shells can list the archived files within a ZIP file, *Magellan* can show you the contents of these files as well. When launching programs from data files, *Magellan* outpaces the competition at being able to identify a file's application. There's an unerase feature that allows you to view your erased file before unerasing it. Finally, you get a simple backup feature that lacks the speed and file compression of conventional backup programs but is quite serviceable.

Magellan is by far the most powerful shell in this roundup. If the program were easier to move around in and the screens more adjustable, it would earn a

Software You Can Really Use #3

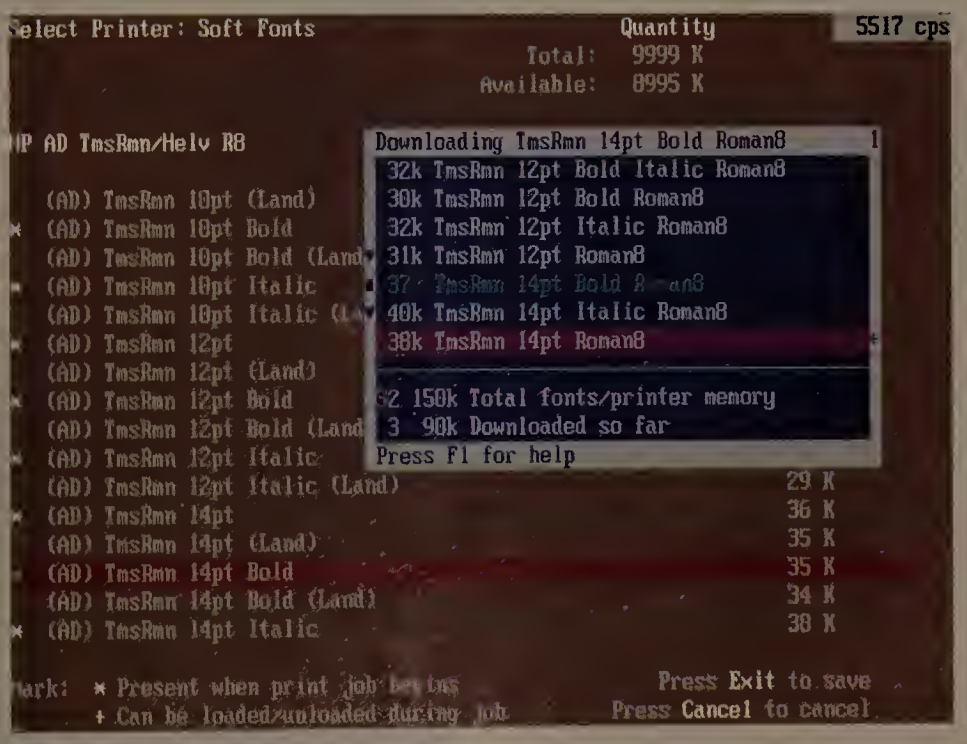
Font Funnel: BackLoader 2.1

Downloading soft fonts to your laser printer is about as much fun as going to the dentist. But you need to download fonts every day.

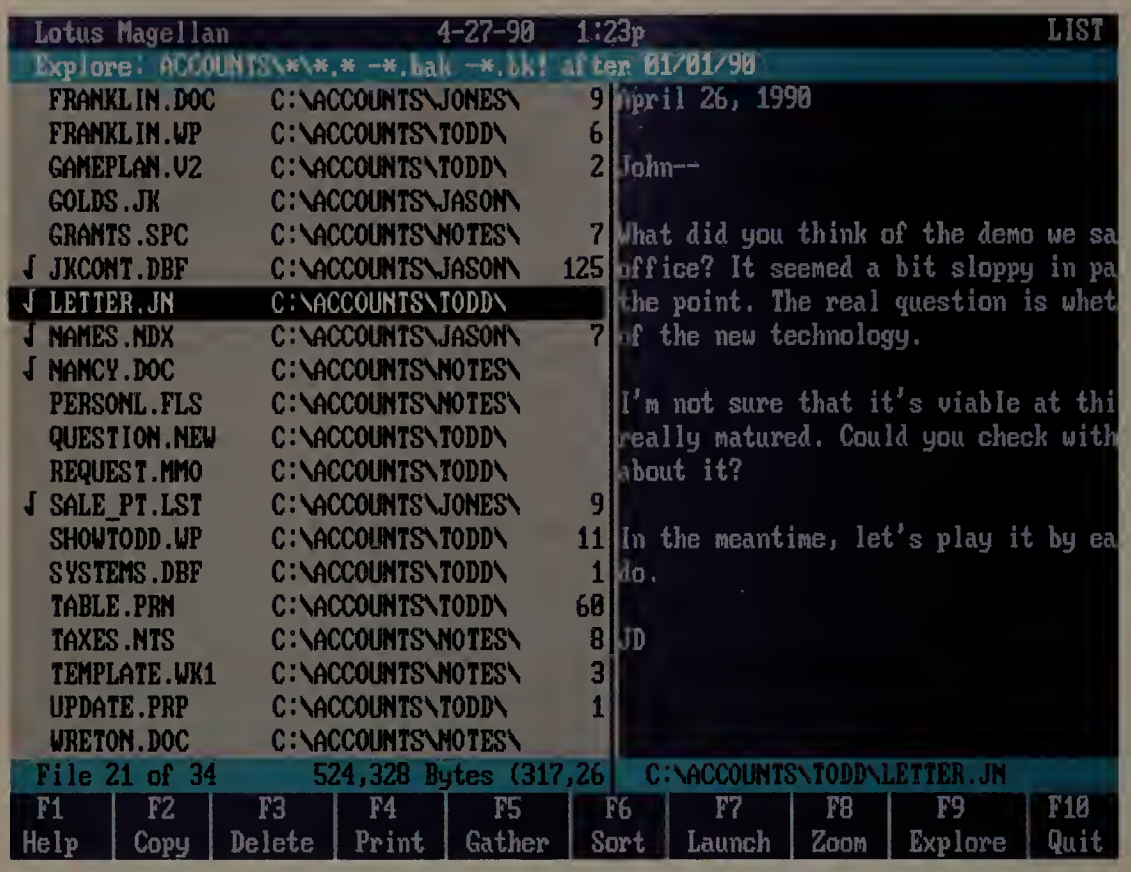
This is not only slow, it's unnecessarily annoying. Some programs work fine with soft fonts, but others start to act confused. Even those that mean to be cooperative may not be particularly bright. *BackLoader 2.1,* though, can give them lessons.

BackLoader is an intelligent font controller that uses very little memory—about 9K of conventional RAM if you also have EMS memory, otherwise 25K of conventional RAM. It downloads fonts in the background, and if a new font or a graphic image is called for and printer memory is full, *BackLoader* removes the least recently used font. You can set up configuration files so fonts download immediately when you load a given application. *BackLoader* works with scalable and bit-mapped fonts and with all LaserJets and compatibles (but not with PostScript printers). List price: $89. Roxxolid Corp., 3345 Vincent Rd., Pleasant Hill, CA 94523-4318; 800/336-7699. —*Steve Bass*

Reader service no. 624



If soft fonts have turned into a hard problem, BackLoader offers numerous touches that can greatly ease the task of downloading the fonts to your laser printer.



When Magellan's file-listing window isn't full screen, important information is blocked.

Best Buy. If your need for grouping and examining files is great, these flaws may be worth overlooking.

Norton Commander 3.0

If you want a shell but don't want to give up the DOS prompt, or if you use MCI Mail, Peter Norton's *Norton Commander* could be for you. No other shell lays its lists and menus over the familiar DOS screen quite so effortlessly, and it offers excellent file viewers and program-launching features. Unfortunately, its complete inability to deal with files from more than one directory in a list keeps it from the top spot.

Commander has a very good interface, with logically organized menus and excellent mouse support. Each of the two vertical panels displays a file list, a directory tree, a file view, or system information. The DOS prompt sits ever ready at the bottom of the screen, augmented by an editable command stack. You can copy file names to the command line with a keystroke. Best of all, *Commander*'s menus and panels pop up over the existing screen without erasing it. Turn a *Commander* panel off, and you see the output of your last command.

Although you can display two lists at once, each list is limited to a single directory; there's no way to list files across directories save for a simple file-find feature. You can filter and tag files only by name, and there's no text-search capability.

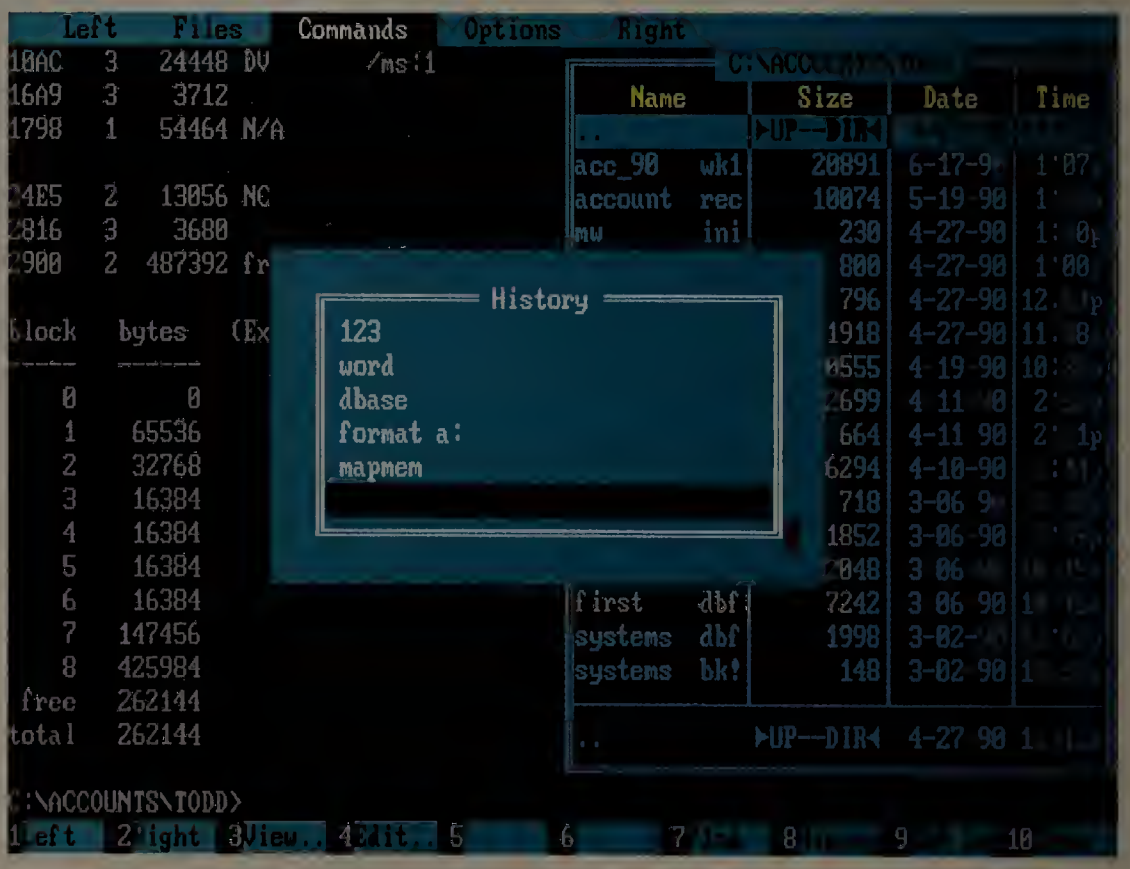
The application-specific file viewers are quite good, although there's no ZIP viewer. Programs can be launched from data files. *Commander* has an excellent MCI Mail module that's similar to *Lotus Express*'s, but without the advantages or disadvantages of being a TSR. *Commander* lets you link PCs via serial cables, edit file attributes, and compare directories.

If you use MCI Mail and don't already have *Express, Commander* is a must. If you want your shell and the DOS prompt too, it's worth a look. But if you need various file-listing options, this isn't the shell for you.

1dir+ 3.03

Bourbaki's *1dir+* (pronounced "wonder plus") is the most programmable shell in the roundup; but it lacks application-specific viewers, launching from a data file, text search, and other useful features. If you're building custom shells for others, it's worth a look; otherwise, the steep learning curve and lack of extras make it only a fair value.

1dir+'s interface could use some improvement. It gives you a choice of eight displays, one with each file's date, time,



With Norton Commander, you can display a command stack, a file directory, and output from another program all on the same screen.

EXECUTIVE SUMMARY

A New Generation: DOS Shells Get Smarter

With its smooth interface and slick file viewers, PC Tools Deluxe wins a Best Buy.

Today's DOS shells do far more than simply provide menu-driven access to DOS commands. By letting you group files in a variety of ways, view their contents in legible form, and load them together with their respective applications, these shells free you to think of your files as information rather than just the output of specific applications.

BEST BUY

The DOS shell in **PC Tools Deluxe 6.0** mixes the easy-to-use features of a basic menu-driven DOS front end with the most advanced file-listing and -viewing capabilities around. Although it can't sort user-defined lists, it's a clear Best Buy. **Magellan 2.0** beats **PC Tools** in a features war, but its awkward interface keeps it from winning top spot. If you're looking for something a little less ambitious, **Tree86** is a fast, easy-to-use shell that lacks such extras as the ability to peek at the contents of non-ASCII data files.

	Disc Director 1.06	Magellan 2.0	Norton Commander 3.0	1dir+ 3.03	PC Tools Deluxe 6.0	SoftBreeze 3.0	Tree86 3.2	XTreePro Gold 1.4
File handling	Good	Excellent	Fair	Good	Fair	Fair	Good	Good
User-defined lists	Fair	Excellent	Poor	Good	Excellent	Fair	Good	Good
File viewers	Poor	Excellent	Excellent	Poor	Excellent	Poor	Poor	Good
Application launching	Fair	Excellent	Excellent	Fair	Excellent	Excellent	Fair	Excellent
DOS command-line access	Fair	Fair	Excellent	Excellent	Good	Good	Good	Good
Ease of use	Good	Fair	Excellent	Poor	Excellent	Fair	Good	Poor
Overall value	Fair	Good	Good	Fair	Excellent	Fair	Good	Fair
					BEST BUY			
Reader service no.	601	602	603	604	612	606	607	608

How we rate DOS shells
We rate DOS shells based on the information in the Features Evaluation table, combined with our opinions of benefit and ease of use. Basic file-handling features are the most important, followed by tools for grouping and examining files.

File handling refers to the ability to tag files for mass copying or deletion. At its best, a shell will let you tag files by name, date, and even contents and allow you to reverse the tags en masse. We also consider whether a shell has a directory tree, tools for pruning and grafting directory branches, and the capability to assign long names to files.

User-defined lists pertains to the ability to list files from more than one subdirectory. An Excellent rating means the program can display any number of file-name sets from any number of directory-name sets (for example, C:\UTIL**.DOC), then narrow the list to only those files containing a particular text string.

File viewers let you examine a data file without entering the application it was created in. All eight shells can display a file in ASCII; the best offer a wide array of application-specific viewers, allowing data files from popular applications to appear as they do in their native programs.

Application launching is the ability to load and run programs from inside the shell. All eight applications allow you to start a program by selecting the COM or EXE file. Most go a step further, letting you create menu options for loading programs. The best can launch the appropriate application automatically when you select a data file.

DOS command-line access and enhancements are important because, no matter how good a shell is, it's often easier just to type a command. If a program has an ever-ready DOS command line on the main file-handling screen, a command stack for repeating previously used command strings, and the ability to copy file names to the command line, it receives an Excellent rating.

Ease of use depends upon the shells' user interface. Criteria include the clarity of the menus and the ease with which you can move through directories, as well as the quality of mouse support.

Overall value takes into account all the above criteria, with special emphasis on ease of use. Price, technical support, and how much RAM the shell leaves for other programs also affect the overall rating.

and attributes, another with on-screen instructions, another listing every file on your disk, and so on. Most commands are function key based, and there are ten separate function key menus. This arrangement results in frequent confusion as you try to remember how to get to the information or menu option that you want.

1dir+'s file handling is capable, and access to DOS is superior. In many of *1dir+*'s displays, the DOS prompt appears right on screen. File names and extensions can be moved to the prompt separately, and previous commands can

XtreePro Gold's main screen has lots of information, but it's not easy to find what you want.

be brought back and edited. You can set *1dir+* to pause after a command or program is run so that you can read the output before it's obliterated by the returning *1dir+* screen.

Options for creating the user-defined list are satisfactory. You can list by directory or branch or across a disk, and filter out files by name or date but not by text. *1dir+*'s extensive configurability lets you assign filters, sorting options, screen displays, and menus to directories, so that, for instance, whenever you go to C:\DOC\MEMOS\, *1dir+* will appear the same way as the last time you were there.

If you have expanded memory, you can configure the shell to use as little as 8K; otherwise, *1dir+* demands a whopping 42K, by far the highest RAM consumption in the roundup. Fortunately, when you turn an application into a menu option, you can have *1dir+* remove itself from memory entirely.

Version 4.0 of *1dir+*, due in early summer, is expected to add tagging by contents; pruning and grafting; long file names; and other features. If you're setting up systems for other, less experienced users, *1dir+* is worth a look. Otherwise, look elsewhere.

PC Tools Deluxe 6.0

PC Tools is a lot more than a DOS shell. The backup program, disk optimizer, scheduler, and file recovery tools that come with this utility of all trades are reviewed elsewhere in this issue. The package also has an outliner, a communications program, a flat-file data base, and four calculators, but this review examines only its capabilities as a shell. As such, it wins the roundup's Best Buy, combining features that rival *Magellan*'s with an interface as smooth as *Norton Commander*'s.

PC Tools' interface is a dream. The directory, tree, and view windows are easily resizable and movable in a first-class character-based imitation of a graphical user interface. You can even copy a file by dragging it from one directory to another. Mouse support is the best in the roundup. The DOS command line is on screen, and, as with *Norton Commander,* the returning *PC Tools* windows don't obliterate the output of another application or command. The command line isn't as usable as that in *Commander* or *1dir+*, though; you can't copy a file name to the prompt, and you can't edit the command stack.

The user-defined lists are second only to *Magellan*'s. Multiple file names, including paths and wild cards, define the contents of a list, with optional text search further narrowing the files included. The weakness of the user-defined lists is that they are in directory order and can't be sorted; having to know which directory a file is in defeats one of the main purposes of user-defined lists. Tagging is limited; you can tag all the files in a list, or you can tag by name, but you can't tag by date, attribute, or—without a bit of trickery—contents.

PC Tools provides excellent viewers for a great many applications. Because the windows are so adjustable, *PC Tools* is the only program in the group that displays files in a horizontal window, allowing you to see all the way across a document without having to zoom it full screen. Application launching is smooth and easy to set up.

The *PC Tools Deluxe* shell isn't the best in every category, but there are few in which it's not at least a close second. The only program that truly mixes first-rate file searching and viewing with an easy-to-use interface, *PC Tools Deluxe* stands above the rest.

SoftBreeze 3.0

The DOS shell is only part of Soft Shell's *SoftBreeze,* which also contains a good menu-driven application launcher and tools for handling RAM-resident programs. Although the shell module offers user-defined lists and application-specific viewers, the features are poorly implemented.

SoftBreeze's installation program starts off on the wrong foot by rewriting your CONFIG.SYS without asking and placing a big file in your root directory that the program doesn't even need. The interface isn't very configurable, and the mouse support is feeble; with no pointer, your rodent moves only the file selection lightbar. Furthermore, the mouse is too sensitive; a nudge of the hand sends the pointer skittering

¿Habla usted español? No, you don't speak Spanish?

Then, Translate is made to order for you. It's an enormously useful tool for anyone who has to communicate in writing with America's fast-growing Spanish-speaking population.

With this revolutionary software program, all you do is input text written in English. Virtually instantaneously, you'll have the Spanish equivalent. With a straightforward English text, you get a precise, unadorned Spanish translation. Nuances of language and stylistic preferences obviously require some familiarity with Spanish and these can be easily implemented through the dictionary update function.

How To Make Yourself Understood In A Language You Don't Understand.

gram handles translation of complete phrases — unlike other programs that function word by word.... Besides being easy to use and fast to learn, it works!"

Translate utilizes an 85,000 term English-to-Spanish dictionary. You can make your dictionary even more functional by adding as many words or phrases as you like. Corporate jargon and specific terminology may all be incorporated into the system via its dictionary update function. Finalsoft's User Support Service will assist you in customizing the dictionary.

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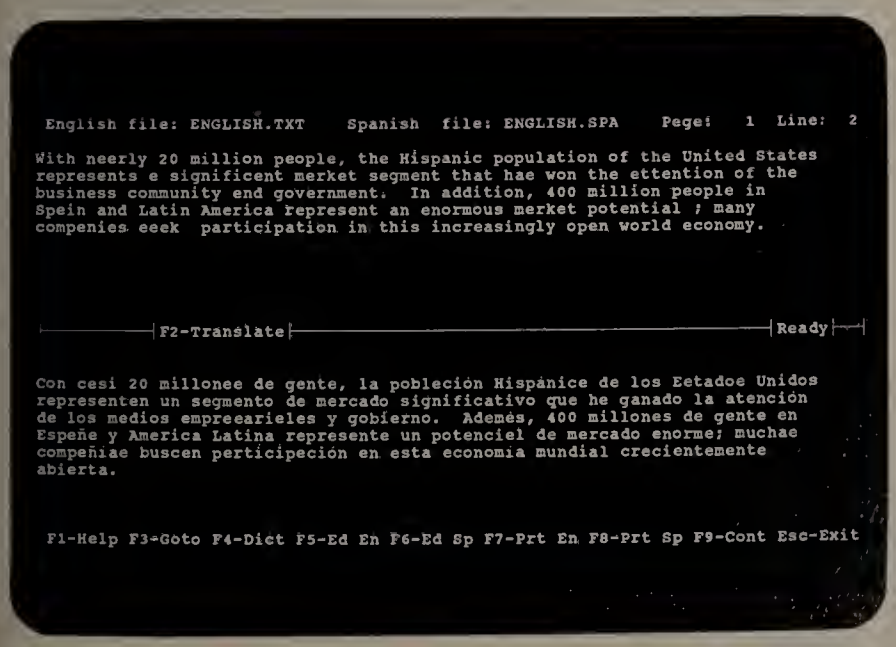

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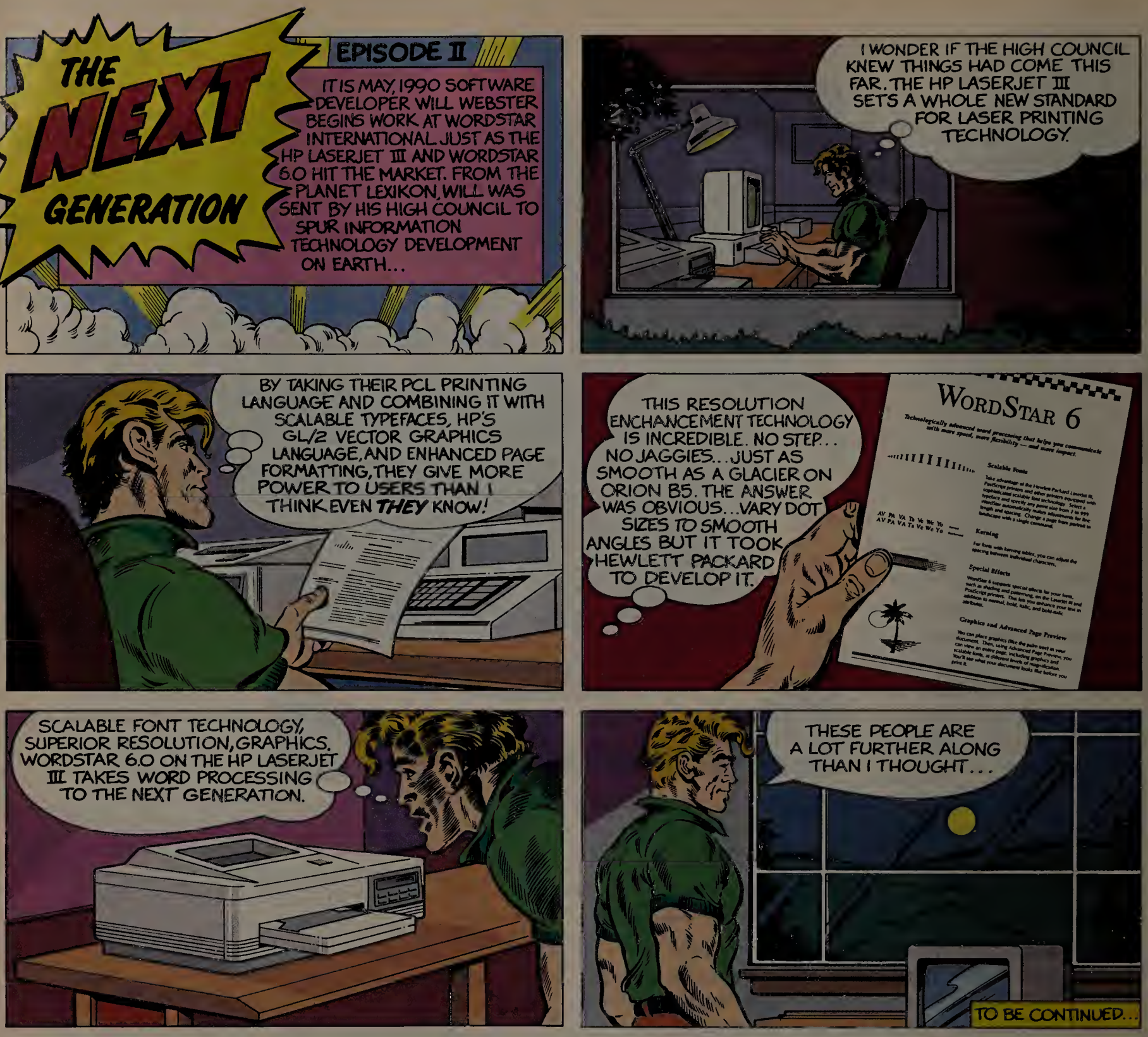

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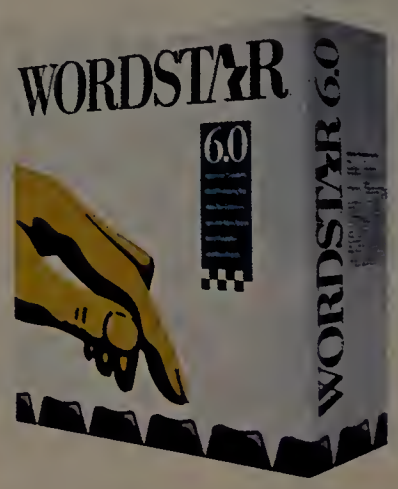

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across the screen, popping menus up and down as it goes.

The user-defined lists are lackluster. You can use name, directory, date, and long-file-name options for each list, but you're limited in what you can do with these options. For instance, you can list only one file name—with wild cards—

Tree86's text search feature, one of the best in the roundup, benefits from the program's speed.

and directory choices are limited to one directory or the entire disk.

SoftBreeze's single standout is the way it attaches long file names to each file. Unlike with the other shells, this feature is application aware. With supported file types, *SoftBreeze* saves the long file names as part of the original document, in ways that the original application can understand—as *WordPerfect* comments, for instance.

Unfortunately, file-viewing options are limited to ASCII, *WordStar,* and *1-2-3.* The *1-2-3* viewer displays all columns nine spaces wide, making highly formatted worksheets hard to read.

The keyboard macros advertised on the box are documented only in a separately sold book, although SoftShell promises to have combined documentation available soon. *SoftBreeze* requires a TSR that takes 32K out of your RAM when you're running applications. *SoftBreeze* demands a lot from your system, and it offers very little in return.

Tree86 3.2

Tree86, by the Aldridge Company, is the smallest of the shells reviewed, taking only about 270K of disk space and requiring just 180K of RAM. Not as powerful as some of its rivals, *Tree86* is the fastest at many operations, and it's very easy to learn. If you want a swift, simple DOS shell with some advanced features and don't mind the lack of file viewers, this is the program for you.

Tree86's interface is clean and easy to learn, but it's lacking in options. You can't look at both a directory tree and a file listing at the same time, for instance. Mouse support is good, although it's missing in the viewer and the editor. This is a very fast program. Searching files for text in *Tree86* doesn't take much longer than pulling up files by name in some of the competing programs. Changing the sort order of the files on a full 40MB hard disk takes about a second.

The user-defined listing options are good but not spectacular. You can make a list of all the files on disk, those that match one of up to four file names with wild cards, files with duplicate names, or tagged files from a current list. You can also list file attributes.

The text search feature, one of the best in the roundup, benefits from the program's speed. You tag the files you want searched, and *Tree86* untags those without your text. Otherwise, tagging options are limited, lacking even direct support for tagging by name. On the plus side, tags can be reversed.

Tree86 lacks application-specific viewers, and the text viewer's command-driven interface comes as an unpleasant shock after *Tree86*'s own point-and-shoot style. Furthermore, the viewer consistently locked up a 16-MHz Compaq Deskpro 386 when run under *Desqview.*

The only way to launch an application from *Tree86* is from the EXE, COM, or BAT file; there's no launching from a data file or a definable menu. But if program-launching options, file viewers, and versatility aren't as important to you as speed and ease of use, *Tree86* might be the ticket.

Software You Can Really Use #4

DOS for the Nineties: 4DOS

Face it, your wish list for DOS improvements gets longer with each update from Microsoft. But your plea has been answered from shareware heaven in the form of *4DOS,* the complete replacement for COMMAND.COM. *4DOS* is a shell that, unlike most, doesn't isolate you from DOS. It just adds a wide array of features that DOS omitted.

4DOS can perform a dozen commands that all appear on one line separated by carets. There's support for long file names, plus over 30 new commands. Nicer still is its minimal memory usage: A 5K kernel stays resident in RAM while the rest gets swapped to either EMS memory or disk. The disk swap can be to a RAM disk.

Want more? Try on-line help for all of *4DOS*'s internal commands. Additionally, you can blast, say, your last 30 DOS commands onto the screen, modify any of them, and quickly reexecute them. *4DOS* also features exceptionally flexible wild cards. To display all the files that have a *y* in their name, for example, you would type **dir *y*.***. List price: $50 (shareware). JP Software, P.O. Box 1470, East Arlington, MA 02174; 617/646-3975. —*Steve Bass*

Reader service no. 619

XtreePro Gold 1.4

Xtree Software's *XtreePro Gold* has most of the features that define a first-class DOS shell. You can list files across a disk or multiple disks, tag files by contents, view data files in their native formats, and launch from a menu or from a program or data file. You can even archive files in either the old ARC format or a proprietary one. What's more, it's the only product reviewed that offers toll-free technical support for an indefinite time. Unfortunately, if you're not already an *Xtree* user, you'd better prepare to spend some time learning the ropes.

The menus are poorly designed and confusing. For instance, a Tag option appears on at least three separate menus, but on each it has a different meaning, and there's nothing on screen to clue you in as to the current one. Mouse support is good, but that doesn't make the interface any easier to learn.

The user-defined list options are ample. You can list files in one or more directories, across a disk, or across all disks. A listing can be filtered by file names that have wild cards or by tagged file names. Because you can tag by contents or attributes, you can indirectly list files by these criteria as well.

Application-specific viewers are included for the bigger programs, such as *1-2-3, dBASE,* and *Microsoft Word,* but the viewing process is not always straightforward. For instance, *WordPerfect* files don't appear in the proper format until you zoom the viewer full screen and select the Formatted option.

XtreePro Gold has most features that define a first-class DOS shell.

If you're already using an earlier version of *Xtree,* an upgrade to *Pro Gold* would be well worth the cost. Otherwise, look elsewhere.

Cracking the Shell

Best Buy *PC Tools Deluxe* balances ease of use and powerful file management. *Magellan* does the best job with advanced features like user-defined lists and application-specific viewers, but its interface is weak. *Norton Commander* offers the simplest access to the DOS prompt, while *Tree86* is fast and easy to learn.

Creating a shell that flawlessly combines advanced application independence with basic ease of use must be difficult. No one has yet made one that lets you easily copy a file, navigate a directory structure, and examine every document you worked on last week with the name *Francis* in it. Until someone does, however, you still have worthwhile values to choose from.

Lincoln Spector is an assistant editor for PC World.

For more information about all products in this article, circle reader service no. 901.

WHERE TO BUY

Disc Director 1.06
Athena Software
4915 Twin Lakes Rd.
#19
Boulder, CO 80301
303/530-0693
LIST PRICE: $79
REQUIREMENTS: 512K, DOS 2.0 or later version
TECHNICAL SUPPORT: unlimited, toll number, M–F 8:30–5
OTHER SUPPORT: none
Reader service no. 601

Magellan 2.0
Lotus Development
55 Cambridge Pkwy.
Cambridge, MA 02142
800/343-5414, 617/577-8500
LIST PRICE: $139
REQUIREMENTS: 384K, DOS 2.0 or later version
TECHNICAL SUPPORT: unlimited, toll-free first six months, M–F 8:30–8
OTHER SUPPORT: none
Reader service no. 602

Norton Commander 3.0
Peter Norton Computing
100 Wilshire Blvd., 9th Fl.
Santa Monica, CA 90401
800/365-1010, 213/319-2000, 213/458-2048 (fax)
LIST PRICE: $149
REQUIREMENTS: 256K, hard disk, DOS 2.0 or later version
TECHNICAL SUPPORT: unlimited, toll number, M–F 7–5
OTHER SUPPORT: none
Reader service no. 603

1dir+ 3.03
Bourbaki Inc.
P.O. Box 2867
Boise, ID 83701
800/289-1347, 208/342-5849
LIST PRICE: $95
REQUIREMENTS: 256K, DOS 2.0 or later version
TECHNICAL SUPPORT: unlimited, toll number, M–F 9–5
OTHER SUPPORT: BBS
Reader service no. 604

PC Tools Deluxe 6.0
Central Point Software
15220 N.W. Greenbrier Pkwy.
#200
Beaverton, OR 97006
503/690-8090
LIST PRICE: $149
REQUIREMENTS: 512K, DOS 3.0 or later version
TECHNICAL SUPPORT: unlimited, toll number, M–F 8–5
OTHER SUPPORT: BBS
Reader service no. 612

SoftBreeze 3.0
Soft Shell Systems
1163 Triton Dr.
Foster City, CA 94404
800/322-7638, 415/571-9000
LIST PRICE: $99
REQUIREMENTS: 512K, DOS 2.0 or later version
TECHNICAL SUPPORT: unlimited, toll number, M–F 8–5
OTHER SUPPORT: none
Reader service no. 606

Tree86 3.2
The Aldridge Co.
2500 CityWest Blvd.
#575
Houston, TX 77042
800/548-5019, 713/953-1940
LIST PRICE: $89.95; Tree86 Plus, including cache, $99.95
REQUIREMENTS: 180K, DOS 2.0 or later version
TECHNICAL SUPPORT: unlimited, toll number, M–F 8–5
OTHER SUPPORT: none
Reader service no. 607

XtreePro Gold 1.4
Xtree Co.
4330 Santa Fe Rd.
San Luis Obispo, CA 93401
805/541-0604
LIST PRICE: $129
REQUIREMENTS: 256K, DOS 3.1 or later version
TECHNICAL SUPPORT: unlimited, toll-free number, M–F 8–5
OTHER SUPPORT: none
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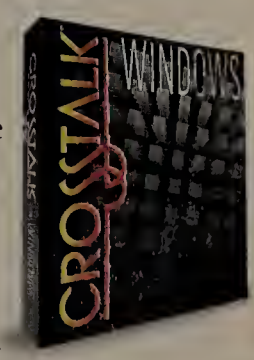

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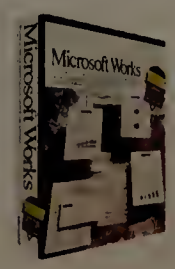

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Disk Trouble? No, Thanks!

When your data's on the line, a little preventive maintenance can really pay off. Which of these nine utilities is the best choice to tune up and troubleshoot your hard disk?

Michael Goodwin

JOSE CRUZ

All hard disks are guaranteed to fail sooner or later. Experienced computer users guard against disaster with frequent backups, but restoring data is tedious—and a bad hard disk may bring your PC down for weeks. Worse, a failing hard disk can introduce data errors long before it breaks down, in which case a backup may not help.

Disk optimizing utilities keep your hard disk working smoothly by spotting trouble before it starts. They can also defragment disk files to speed data reads and reduce wear on the drive.

This roundup looks at nine products: *Disk Optimizer 4.05, Htest 3.0, Mace Utilities 1990, The Norton Utilities Advanced Edition 4.5, Optune 1.2, PC-Kwik Power Disk 1.0, PC Tools Deluxe 6.0, SpinRite II,* and *Vopt 2.2.* Gazelle Systems' *Optune* provides the best combination of crucial features, defragging speed, and ease of use, thereby rating a Best Buy. If you want the most complete feature set, though, you'll need to buy *two* products: *SpinRite II* for disk diagnostics, interleave setting, and nondestructive low-level formatting (see the sidebar "The Fundamentals of Formatting: How Low Can You Go?"); and *Norton 4.5* for defragging.

Key Buying Issues

Hard disks are magnetic storage devices—metal platters with a magnetic coating over which record/playback heads move, writing and reading data. The data is organized in a complex filing system of concentric tracks, each broken into a number of sectors. The longer a disk is used, the more things can go wrong: Flaws can occur in the magnetic coating; read/write heads can drift away from the original set of tracks (positioned during the low-level format); the filing system can develop errors; and, since DOS is designed to use the next available sector whenever it writes data, files can become fragmented across the disk, slowing disk reads and causing unnecessary wear.

Hard disk optimizers come in many flavors and pack a wide variety of capabilities, but few have every feature you need. Highlights include disk surface diagnostics to locate and disable bad and marginal disk sectors; nondestructive low-level formatting to rejuvenate a hard disk that has jiggled out of sync with its original format; testing and re-

Gazelle Systems' Optune wins a Best Buy with the best combination of crucial features, defragging speed, and ease of use.

setting of the interleave to maximize the speed with which data can be read and/or written; and file defragging to find and rejoin segments of a file that DOS has scattered around the hard disk. Ideally, you want all four sets of features.

Surface Testing The ability to find and lock out flaws in the disk's magnetic coating is the single most important feature a disk optimizer can offer. The best tests are both read/write (meaning they write to every sector of the disk and then read back the data to make sure it's correct) and nondestructive (meaning they save your data before starting the test and restore it afterward). Read-only tests are faster, and marginally safer, but they may not catch as many failing sectors.

Testing should flag lost clusters; check and compare File Allocation Tables, or FATs (see the sidebar "The Fundamentals of Formatting: How Low Can You Go?"); and let you lock out bad sectors so they won't be used again. Testing should be accompanied by the ability to move data from a failing sector to a good one. Finally, it should verify that the hard disk controller is working correctly.

Low-Level Format Because the low-level format on your hard disk is never rewritten, it can fade in normal use. In addition, wear and tear on disk hardware may cause the heads to drift away from the original tracks, causing data errors. The ability to rewrite this low-level format, thereby strengthening magnetic data and compensating for changes in the positions of the heads—all without losing any data—is almost as important as surface testing. Also desirable, though not essential, is the ability to do a destructive low-level format. This is handy for brand-new hard disks as well as for PCs and XTs, on which BIOS peculiarities make nondestructive low-level formatting needlessly tough on the hardware.

Interleave The wrong interleave will have a dire impact on how fast your disk reads and writes data. The best disk utilities test the interleave, tell you if it's optimal, and let you change it during the low-level format process.

Defragging DOS can scatter a file all over the disk, slowing down the read process; fragmented files can also cause unnecessary wear and tear on your disk. All defraggers gather the scattered sectors and rewrite them in continuous order on the disk, improving disk performance. The best ones also

close up the spaces left by deleted files and let you place often-read files and subdirectories at the front of the disk for faster access.

All the products reviewed offer a "quick" defrag and a "full" defrag; interestingly, our tests revealed virtually no difference between the increases in program execution speed that resulted from these two strategies, so comparisons of defragging time are based on "quick" defragging. In this mode, *Optune* and *Vopt* took the least time; *Mace* took the longest. Tests clearly demonstrate the benefit of defragging: Bench-

marks ran twice as fast after the disk was defragged. However, product-to-product differences in speedup as a result of defragging were so slight as to be almost imperceptible—and therefore not worth mentioning.

Ease of Use A well-designed interface is especially important when a mistake may trash precious data. A good menu with context-sensitive help is a must, as is a clear, indexed manual.

Oversized Partitions With the proliferation of large hard disks, and operating systems capable of creating oversized partitions (like Compaq DOS 3.31 or later, PC-DOS 4.0 or later, and any DOS with the *SpeedStor* driver), the ability to work with disk partitions larger than 32MB is critical. Consequently, products that can't handle such partitions don't appear in this roundup.

Note that even the best defraggers and nondestructive low-level formatters can unexpectedly turn destructive. Most manufacturers advise you to terminate RAM-resident programs and disable disk caches before running their

THE FUNDAMENTALS OF FORMATTING: HOW LOW CAN YOU GO?

When o hord disk slides off the ossembly line, it's mechanically complete: plotters, heods, ond o blonk mognetic coating. Before it con hold data, however, severol critical things need to happen.

The first is o low-level formot. This process establishes trocks and sectors on the blonk magnetic surfoce. Next, o high-level DOS formot estoblishes o complex filing system that includes logical portitions (letter drives, like D:), subdirectories, ond one or more File Allocotion Tables (FATs)—the tables DOS uses to keep track of which disk sectors ore in use, which files are stored where, ond so on.

Interleave, the number of blank disk sectors left between consecutive dota sectors, is olso set during low-level formot. Interleave compensotes for the fact thot a hard disk con reod or write data foster than the PC it's instolled in con process it. If o hord disk's interleave is 2:1, for instonce, every other sector is used (see FIGURE 1), so thot if o file is three sectors long and the entire trock is ovoiloble for DOS to use, doto will be written on the first, third, ond fifth physicol sectors.

During o continuous-reod operotion, the drive will stort by reading the first doto sector, locoted ot disk sector 1. While the second physicol sector is spinning by, the PC will be preporing to reod the next sector of doto. It will be reody for the reod just as the third physicol sector orrives under the heod. It will do the some thing to reod logicol sector 3 (locoted on the fifth physicol sector). This scheme delivers maximum efficiency ond speed during read/write operotions.

The "right" interleove depends on o complex colculotion involving o PC's processing speed, its I/O speed, ond the time it tokes for the drive's heods to move from trock to trock (the overoge seek time). Disks in AT-class systems usuolly hove 2:1 or 3:1 interleaves, while systems thot run ot 20 MHz or more generolly *eliminate* interleove (olso expressed os 1:1 interleave). Usuolly, interleove is set correctly when the drive comes from the monufocturer, but there's nothing like testing to moke sure.
—*M. G.*

Disk Interleave: Secrets Revealed

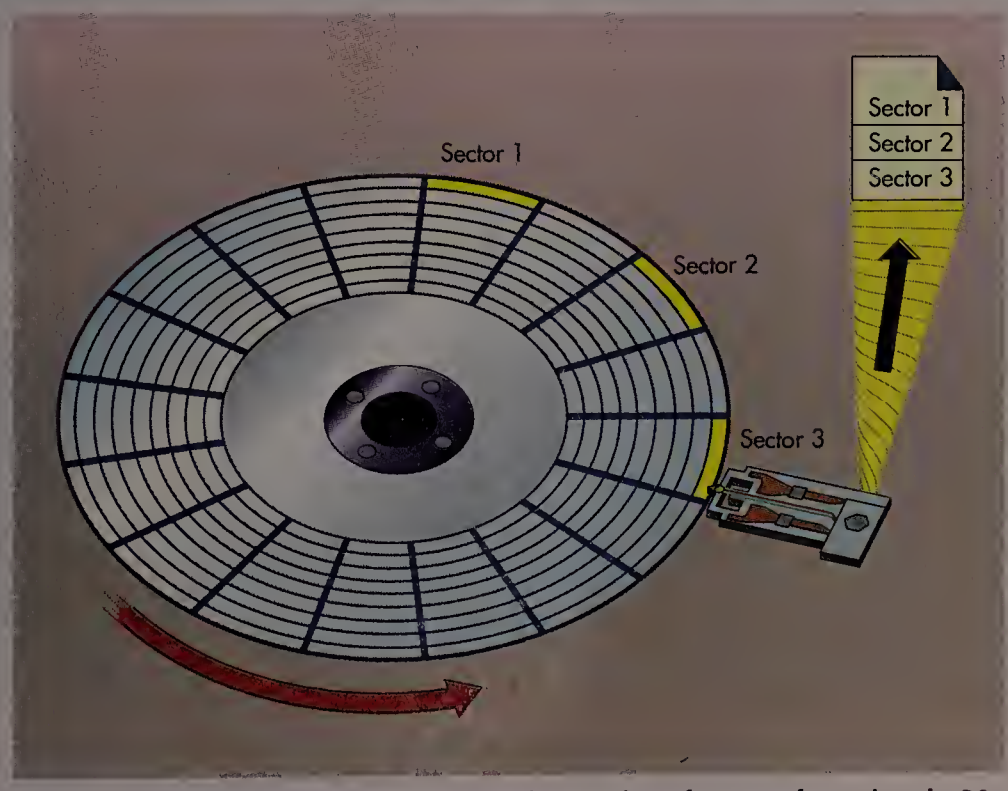

FIGURE 1: Because a hard disk's read/write head can gather information faster than the PC can process it, a technique called interleave was developed. If a hard disk's interleave factor is 2:1, as the disk spins, every other sector is read. Thus a file that occupies 3 sectors is stored in sectors that are logically, not physically, contiguous. To read an entire track takes almost two full turns of the disk; a 1:1 interleave would read a track in one turn.

FEATURES EVALUATION

Optune 1.2 Touches All Bases

A complete hard disk optimizer has to do a lot of little things as well. SpinRite II is the top disk tester. The Norton Utilities delivers the best unfragmenting capabilities. But the well-rounded Optune includes every critical feature, making it the best in a strong field.

● Yes
○ No

	Disk Optimizer 4.05	Hiest 3.0	Mace Utilities 1990	The Norton Utilities Advanced Edition 4.5	Optune 1.2	PC-Kwik Power Disk 1.0	PC Tools Deluxe 6.0	SpinRite II	Vopt 2.2
Standard features									
Price	$70	$130	$149	$150	$100	$80	$149	$89	$60
Menu driven	●	○	●	●	○	●	●	●	●
Indexed manual	●	○	●	●	○	●	●	○	○
Mouse support	○	○	○	○	●	○	●	○	○
Context-sensitive on-screen help	●	○	●	●	○	●	●	●	○
Disk testing									
Read only	○	●	●	●	○	●	●	●	●
Nondestructive read/write	●	●	●	○	○	○	○	●	○
Test controller	○	●	○	○	●	○	○	●	○
Mark bad tracks	●	●	●	●	○	●	●	●	●
Restore good tracks	○	○	○	○	●	○	○	●	○
Move data to safe areas	●	○	●	●	○	●	●	●	○
Note controller retries	○	●	○	○	●	○	○	●	○
Save bad tracks to file	○	●	○	○	●	○	○	○	○
Low-level format									
Nondestructive low-level format	○	●	○	○	○	○	○	●	○
Destructive low-level format	○	●	○	○	●	○	○	○	○
Determine best interleave	○	●	○	○	○	○	○	●	○
Nondestructive interleave reset	○	●	○	○	○	○	○	●	○
Unfragment									
Test degree of fragmentation	●	○	●	●	●	●	●	○	●
Unfragment files	●	○	●	●	○	●	●	○	●
Close up spaces	●	○	●	●	○	●	●	○	●
Move selected subdirectories to front	●	○	○	●	●	○	○	○	○
Move selected files to front	○	○	○	●	●	○	○	○	○
Move selected subdirectories to back	○	○	○	○	●	○	○	○	○
Move selected files to back	○	○	○	○	●	●[1]	○	○	○
					BEST BUY				

[1] You can place fragmented files last.

products, but some hardware disk caches can't be turned off—and some programs are more sensitive to the presence of a disk cache than others. Smart users will *never* run any of these products, not even as a test, without a current, verified backup.

Disk Optimizer 4.05

SoftLogic Solutions' *Disk Optimizer* is primarily a defragger—and a fairly good one—but it also tests your disk's surface. Its low $70 price is another plus. On the downside, however, it lacks two important features: *Disk Optimizer* won't let you rewrite the low-level format or reset interleave.

Disk Optimizer does nondestructive read/write disk testing during defragging and high-level data-refresh operations. Bad sectors are locked out auto-

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matically if they're unused; if they contain data, you can have the program move it to a safe sector.

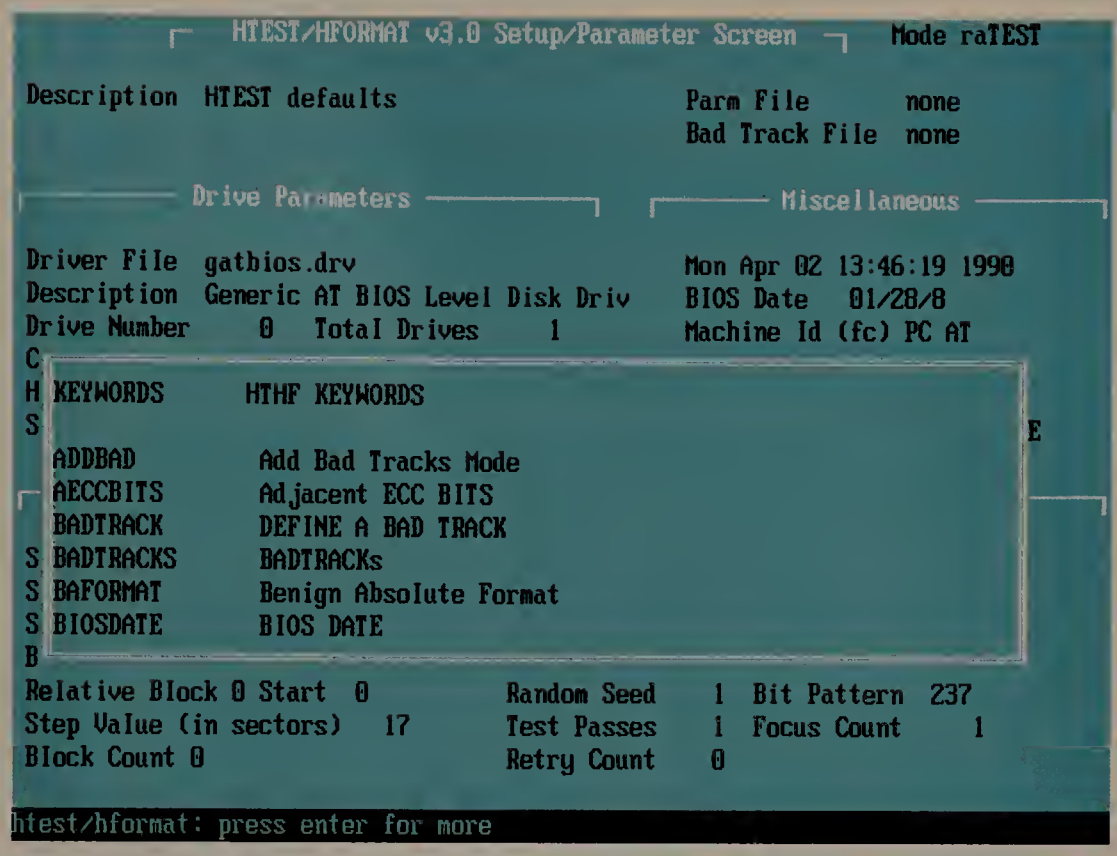
Defragging is straightforward. You can place selected subdirectories (but not selected files) at the front of the disk for faster access, and you can choose between fast defragging or a slower routine that also eliminates spaces between files. Tests show that defragging speed is unexceptional. One nice touch: *Disk Optimizer* is the only product reviewed that tests your PC's RAM and locks out bad memory as further insurance against data loss.

Disk Optimizer's user interface is serviceable. A menu with simple context-sensitive help guides you through most options. However, the high-level refresh program that rewrites data to strengthen the magnetic charge doesn't appear on the menu; you have to run it from DOS. The indexed manual is well written, and if you run into problems there's an in-house BBS, but you'll have to pay long-distance charges for tech support calls.

Smart users will never run any of these products, not even as a test, without a current, verified backup.

The package comes with a number of extra utilities: a program to restore your data after an accidental disk format; a file finder; a file wiper; and Data Guardian, a RAM-resident utility that uses free disk space to archive deleted and overwritten files should you want to restore them later.

Disk Optimizer delivers good defragging features at a reasonable price, but its usefulness is limited by its lack of low-level format and interleave control. There are better choices.



Htest offers a powerful set of surface-testing options, but its interface is so difficult that most users will never put them into operation. This list of keywords passes for a help screen.

Htest 3.0

Kolod's *Htest* is a package of powerful surface-testing and low-level formatting utilities, but it has three major problems: It doesn't do defragging; it lacks the ability to move data from failing sectors to safe ones; and while its command-line interface offers complete control over testing parameters, it's so complex you may need to hire a techie to run it. Moreover, the utility's $130 price tag is relatively high.

The disk diagnostic capabilities built into *Htest* run the gamut from read-only and nondestructive read/write to fully destructive. Unfortunately, the difference between running destructive and nondestructive tests can come down to one letter in a mysterious command; even worse, you must specify a disk driver file to start the test—and the manual warns that if you choose the wrong one, you could lose data. In short, if you're not very careful, you can kiss your data good-bye.

You can also test the controller and, with most PCs, turn off the controller's hardware-based retry routine for tougher disk testing. Here's how that works: Say the controller is designed to retry data reads five times. If four reads are unsuccessful but the fifth succeeds, DOS (and many disk utilities) won't notice the four failures or draw conclusions about a possibly failing sector; *Htest* will.

Htest includes a complete set of interleave testing and resetting features. Low-level formatting can be either nondestructive or destructive.

The worst thing about *Htest* is its confusing command-line interface and lack of on-screen help. Trashing data is dangerously easy, and while the manual clearly states which operations are destructive and which aren't, its poor organization means you may never find the information you need.

Htest's testing and low-level formatting capabilities are powerful, but for most users its scary interface, high price, and lack of defragging knock it out of the running.

Mace Utilities 1990

You'd expect this huge library of utilities from Fifth Generation Systems to do everything; in fact, it handles both defragging and disk testing—but not low-

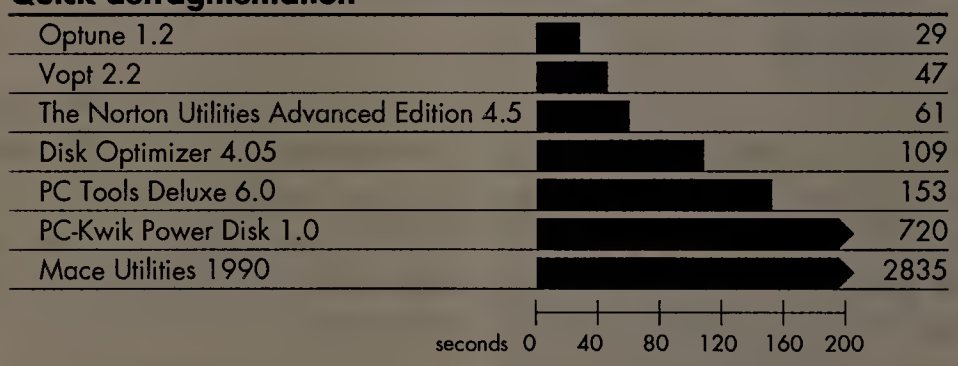
PC WORLD TEST REPORT

Best Buy Optune Takes Defragging Speed Trophy

The ability to defragment a hard disk is just one function of a well-rounded optimizer, but it's the only aspect of performance that can be meaningfully tested. Optune—the fastest by far—earns a Best Buy with excellent implementation of all the important optimizing features. Vopt and Norton turn in respectable performances, while Mace comes in a distant last.[1]

■ Best Buy

Quick defragmentation



[1] Htest 3.0 and SpinRite II, also reviewed, were not tested because they do not include defragging capabilities.

Methodology
Benchmorks were conducted using on Everex 386/25 (25 MHz) with 4MB of RAM ond o 320MB Storoge Dimensions LANStor 320S (SCSI) hord disk. Tests were mode under DOS 3.30 ond DOS 4.01. Results under the two versions were virtuolly identicol, ond only the DOS 3.30 results ore shown. All memory-resident softwore wos disobled during tests.

To prepore the hord disk for these tests, o 32MB portition is set up with 49 subdirectories contoining 18MB of bodly frogmented doto files ond 4 other subdirectories contoining 2MB of unfrogmented progrom files. The disk is then defrogmented using eoch optimizing progrom's quickest possible defrogmentotion mode.

Data based on tests designed and conducted by National Software Testing Laboratories (NSTL), Conshohocken, PA 19428. All rights reserved.

level formatting or interleave adjustment. Moreover, at $149 it's at the top of our price range; it's by far the slowest defragger we tested; and one of its key disk testing routines, Emergency Room, can't handle partitions created by the *SpeedStor* hard disk utilities. In all, it's a bit of a disappointment. (See "Hard Disk Health Insurance" in this issue for details on other features.)

Disk testing is one of *Mace*'s strongest suits. Two separate utilities do the job: Remedy and Emergency Room. Between them they check the FATs, the partition information, and the file structure; and they examine the disk surface with read-only or nondestructive read/write tests. If they find bad sectors, they move the data to a safe location and lock out the bad areas.

Defragging is easy but very slow. You can test to see if there's enough fragmentation to make optimizing worthwhile, and you can also close up the spaces between files. Unfortunately, there's no way to place selected files or subdirectories at the beginning of the disk. Our testing places *Mace* at the very back of the pack in terms of defragging time.

A fine pulldown menu makes *Mace* a pleasure to use, and clear, context-sensitive help is available every step of the way. The manual has a problem with error messages, however; they're not listed alphabetically, and the one I needed to find wasn't listed at all.

Mace Utilities 1990's disk testing and defragging capabilities are valuable, but you can get greater power (and low-level format rewrite) at a lower price from other packages.

The Norton Utilities Advanced Edition 4.5

At $150, *Norton* is in a virtual three-way tie with *Mace* and *PC Tools* for the priciest package in the roundup. Like its high-end pals, it's a generous grab bag of features, most of which are discussed in "Hard Disk Health Insurance." It includes the best defragger in the roundup, but its disk tests are read-only (which means they may miss problems a read/write test would uncover), and it can't handle low-level formatting or interleave.

Two utilities, Disk Test and Norton Disk Doctor, handle disk testing. Both check the FATs, look for missing clusters, and use read-only tests to examine the disk surface; data can be moved to safety if necessary. Disk Doctor takes longer to use, but by disregarding the information in the FAT, in some situations it can read a damaged disk that Disk Test can't.

The defragger, Speed Disk, is by far the best we reviewed. Not only does it check for degree of fragmentation, but it also lets you move selected files and/or subdirectories to the front of the disk. You can choose complete optimization, simple file defragging, or several faster

(mainly cosmetic) options. Speed is above average.

As with *Mace* and *PC Tools*, you'll need to balance the price of this package with how much you need the various utilities. Its menu-driven interface is outstanding, its manual is well written and well organized, and it delivers the best defragging in the roundup. However, if you want powerful disk-testing and low-level formatting features, you'll need another package.

Optune 1.2

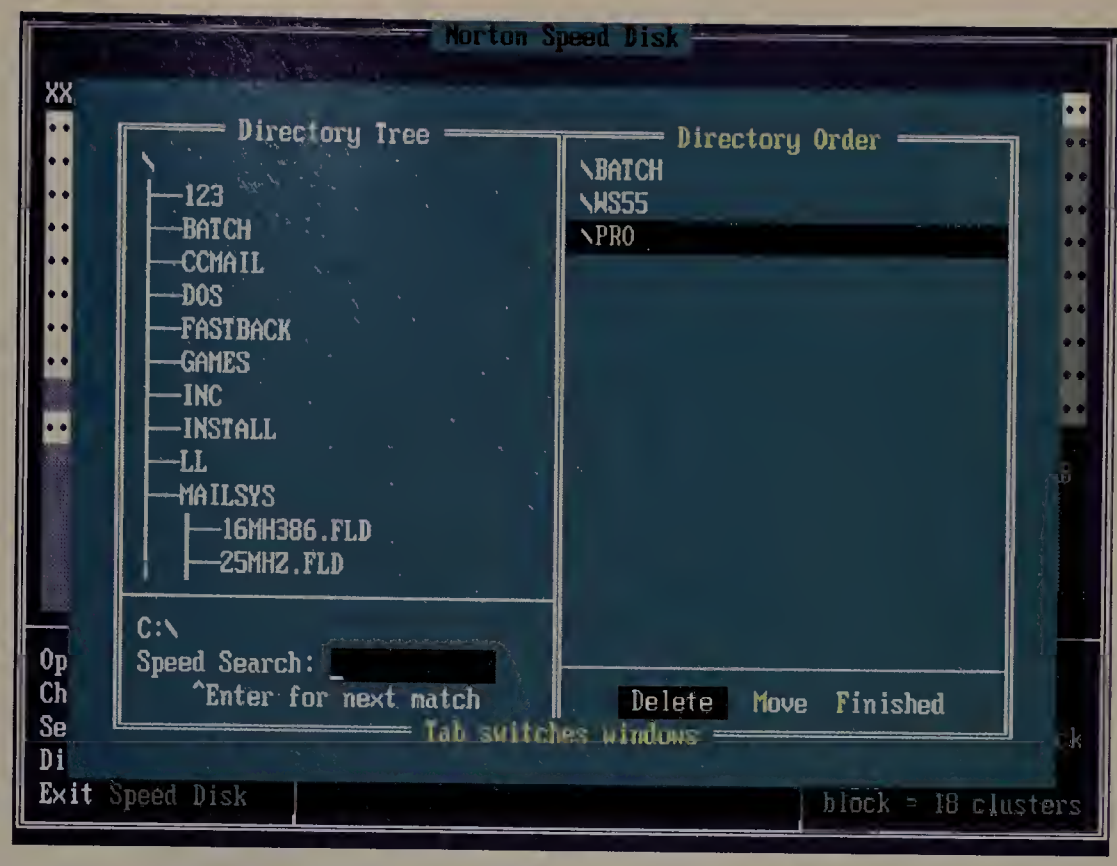
Gazelle Systems' midpriced ($100) disk utility package offers every critical feature in the roundup: defragging, low-level formatting, interleave, and disk testing. And its defragger is fast! It also includes two unusual features: It saves your data to a floppy while it works, protecting the data in case of power failure; and (although the manufacturer suggests that you disable disk caching) if your PC includes a hardware-based disk cache you can't turn off, *Optune* will attempt to run anyway. This product is a Best Buy.

Diagnostics include both read-only and nondestructive read/write tests. *Optune* checks the FAT and file structure for problems before it tests the disk surface, and it will lock out bad sectors and relocate data.

It's easy to do a nondestructive rewrite of the low-level format; you can also test for the optimal interleave and reset it. No destructive low-level formatting is provided.

Optune is the fastest defragger we tested—at least in "quick" mode. Its routine works in several modes: The fastest simply defrags files, but if you've got the time, you can also eliminate empty spaces. The one glaring omission is that you can't select subdirectories or files to be placed at the front of the disk.

A pulldown menu with context-sensitive help makes *Optune* easy to use. You also get a good, well-organized manual with an index and a table of contents—but you may never need to crack it.



Selecting subdirectories and files to be placed at the front of the disk is as easy as pointing and shooting with Speed Disk, Norton Utilities' defragging component.

SpinRite II's Options menu lets you toggle most features on and off—including low-level formatting and a unique capability that returns "bad" sectors to use if they pass its rigorous testing.

While other packages may offer better implementation of individual features (*Norton*'s defragging, for instance), none of them provides such a powerful combination of capabilities. If you buy only one disk optimizing package, this reasonably priced Best Buy is the one to choose.

PC-Kwik Power Disk 1.0

This low-priced ($80) package from Multisoft is primarily a defragger, although it provides some disk testing capabilities too. However, it won't let you rewrite the low-level format or test or reset the interleave.

EXECUTIVE SUMMARY

Keeping Hard Disk Trouble at Bay

Nine ways to keep your hard disk running right

These disk optimizing utilities are intended to keep your hard disk working smoothly—and as swiftly as possible. The key capabilities for such utilities are surface diagnostics, interleave control, defragging, and the ability to rewrite the low-level format. All are important in keeping trouble away.

BEST BUY

Of the nine utilities reviewed, only **Optune** covers all four critical areas. While it lacks a few handy but dispensable features, it lets you perform all operations required to keep your hard disk in top shape, and even nontechnical users will be comfortable with the excellent user interface. For simple defragging, **The Norton Utilities** delivers the best mix of features, plus outstanding speed. For everything but defragging, **SpinRite II** is far and away the best choice.

	Disk Optimizer 4.05	Hiest 3.0	Mace Utilities 1990	The Norton Utilities Advanced Edition 4.5	Optune 1.2	PC-Kwik Power Disk 1.0	PC Tools Deluxe 6.0	SpinRite II	Vopt 2.2
Disk testing	Good	Good	Excellent	Good	Excellent	Good	Good	Excellent	Fair
Low-level format and interleave	n/o	Excellent	n/a	n/o	Excellent	n/o	n/o	Excellent	n/a
Defragging	Good	n/a	Fair	Excellent	Fair	Foir	Fair	n/o	Foir
Performance	Good	n/o	Foir	Excellent	Excellent	Good	Good	n/o	Excellent
Ease of use	Good	Poor	Good	Good	Excellent	Excellent	Good	Foir	Fair
Overall value	Good	Foir	Foir	Good	Excellent	Good	Fair	Good	Fair
					BEST BUY				
Reader service no.	686	687	680	681	688	689	612	690	691

How we rate disk maintenance and optimizing utilities
We rate these utilities based on information in the Features Evaluation table and NSTL Test Report, combined with our opinions of quality, reliability, and user benefit.

Disk testing rates the disk-surface diagnostics a utility provides. An Excellent score requires that both read-only and nondestructive read/write tests be provided, that bad tracks can be locked out, and that data can be moved from bad to good sectors.

Low-level format and interleave applies to features that manipulate and renew low-level information on a hard disk. An Excellent score requires the abilities to test and reset disk interleave and to do a low-level format without losing data.

Defragging is the ability to rewrite each file that DOS has scattered around a hard disk into logically contiguous clusters. To gain an Excellent rating, utilities must test the degree of file fragmentation, defrag the files, close up spaces left by deleted files, and let you select subdirectories and files to be placed at the front of the disk for faster access.

Performance here refers only to the time it takes to perform a quick defrag and the efficiency of the result. Performance has a big impact on a product's overall value only when the scores are clearly inferior or outstanding. An Excellent rating requires that a product's performance be in the top 20 percent. Programs without defragging capabilities did not receive a performance rating.

Ease of use includes ease of selecting test, low-level–format, interleave, and defragmenting options. Excellent programs must provide logical, menu-driven access to these features, as well as context-sensitive help, an indexed manual, and clear test results.

Overall value averages all the above criteria, plus price.

Power Disk's testing routines lack a read/write option, but most other important testing features are supported: Bad sectors can be locked out, and if they contain data, *Power Disk* reports the file name and offers you the option of relocating the data.

Defragging is simple enough and fairly fast. *Power Disk* will check for fragmentation and advise you whether to proceed. You can choose between several defragging modes, but on-screen descriptions are so vague, you'll need to pore over the manual to find out what these modes actually do. You can't select files or subdirectories to be placed at the front of the disk, but frequently written files can be placed at the back of the disk, where they won't mess up your newly optimized disk. An ongoing backup assures that your data will be safe if power fails during defragmentation.

An easy-to-use menu-driven interface with handy on-screen help sim-

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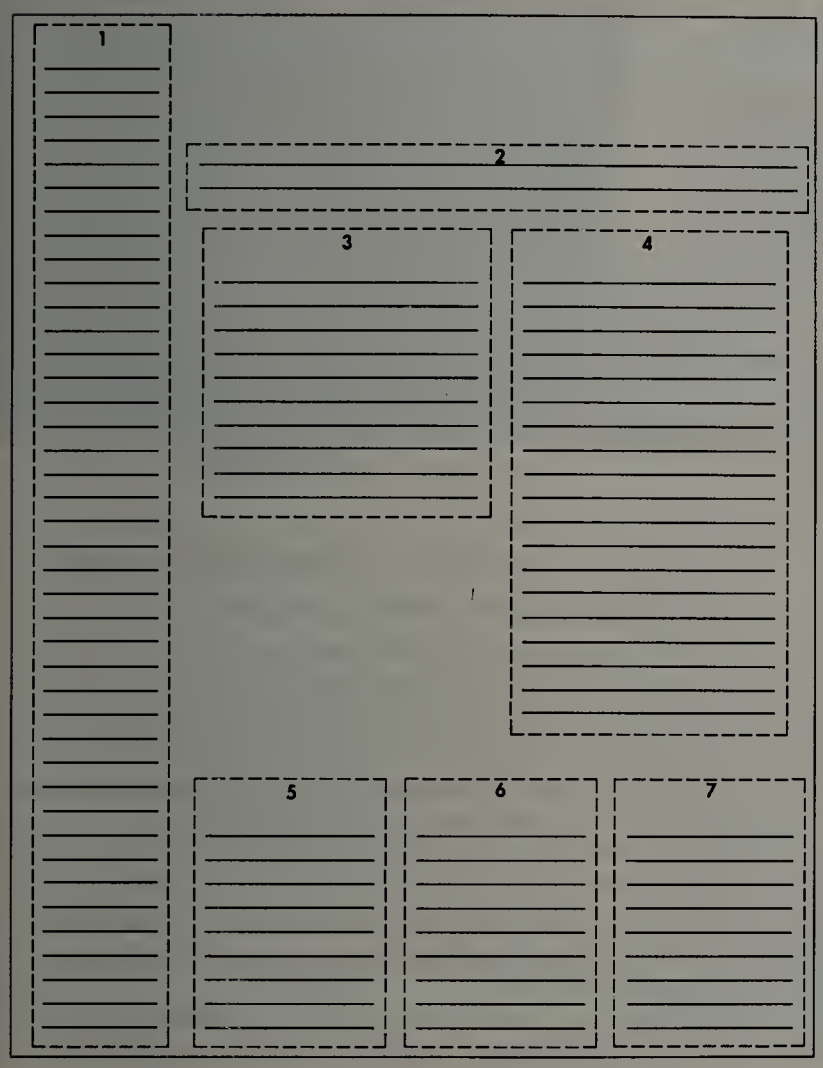

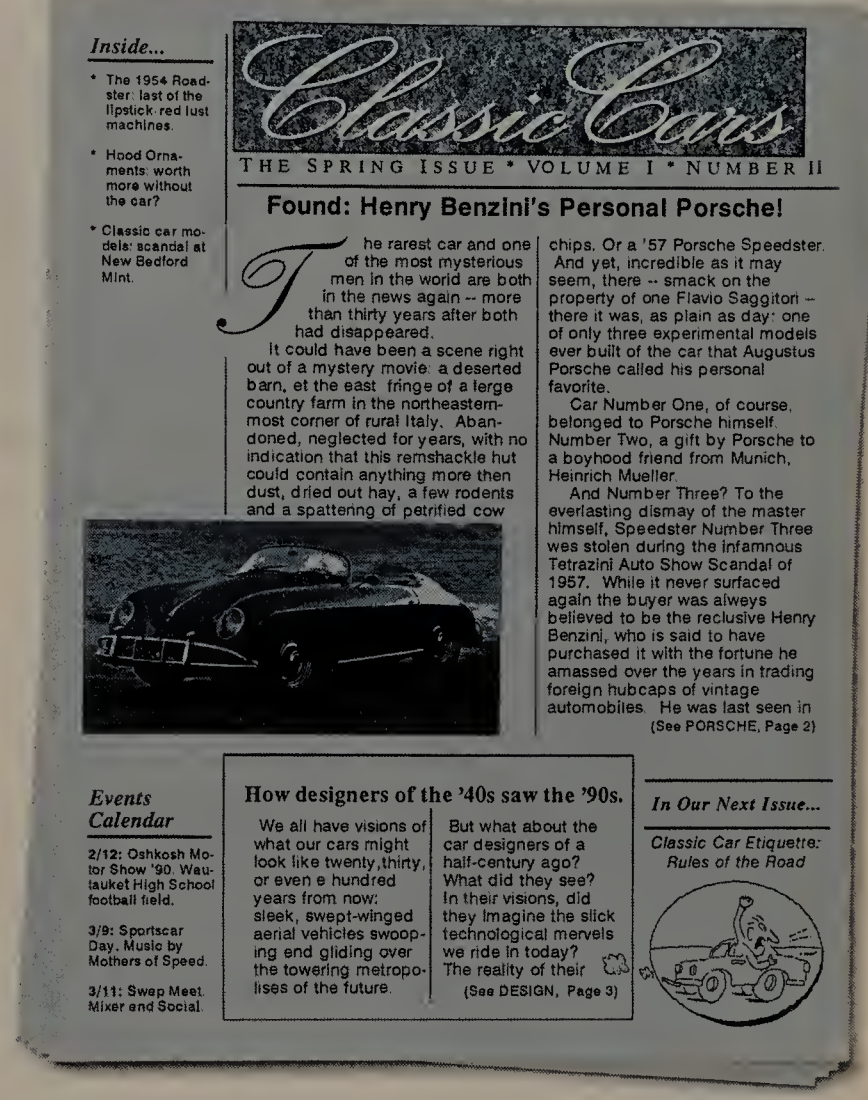

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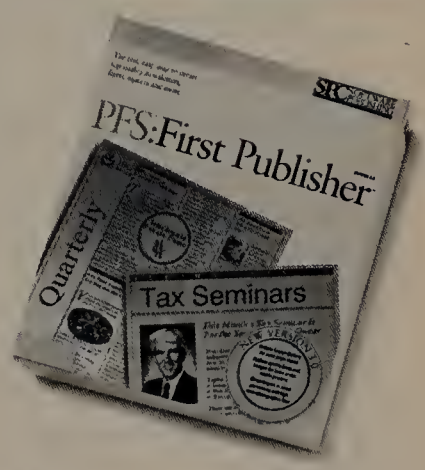

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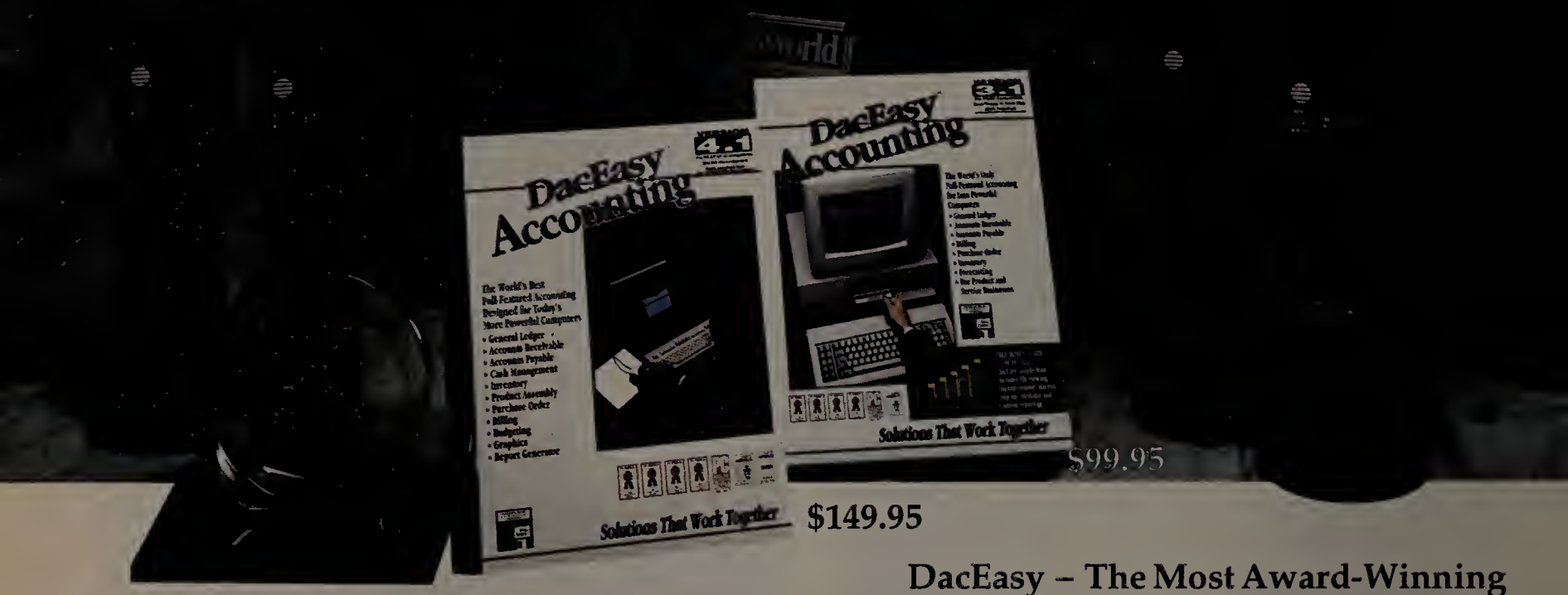

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plifies operations. The indexed manual is well written.

Power Disk comes with a number of auxiliary features, but only Disk Explorer, which provides a map indicating where files are located on your disk, seems very useful. The bottom line is that *Power Disk* lacks low-level formatting capabilities, and its testing and defragging routines are comparatively underpowered. You can do better.

PC Tools Deluxe 6.0

This large utility library from Central Point Software is similar to *Norton* in price ($149) and power, although unlike *Norton*, it rated a number of Best Buys in other utility reviews in this issue. Both packages offer disk testing and defragging, but neither has low-level formatting capabilities.

Disk diagnostics are virtually identical in *PC Tools* and *Norton:* Both test the disk surface (but just in read-only mode), move endangered data, and lock out bad sectors. The program's basic defragging capabilities are similar, too, although *PC Tools* lacks *Norton*'s ability to move selected subdirectories and files to the front of the disk. Defragging speed is unremarkable.

The menu-driven interface is terrific if you use a mouse but a bit clunky without one. It may take a while to wade through the three fat manuals, but good organization and indexes help a lot.

PC Tools' defragger is less capable than *Norton*'s. While you can't find a richer library of general disk utilities, *PC Tools* simply lacks depth in disk optimization.

SpinRite II

Gibson's *SpinRite* ($89) is best known for its nondestructive low-level format rewrite, but it also checks RAM, performs the most extensive disk testing in the roundup, and evaluates and optimizes interleave like a champ. There are only two drawbacks. It doesn't do defragging, and it's a bit pickier than the other products tested: It won't work at all with disk caching or with drives that have nonstandard low-level formats (such as all Conner units, the disk built into many Compaq computers).

SpinRite offers an impressive assortment of test routines. Its toughest (a nondestructive read/write test) can

Software You Can Really Use #5

Fire All Lasers: SETHP

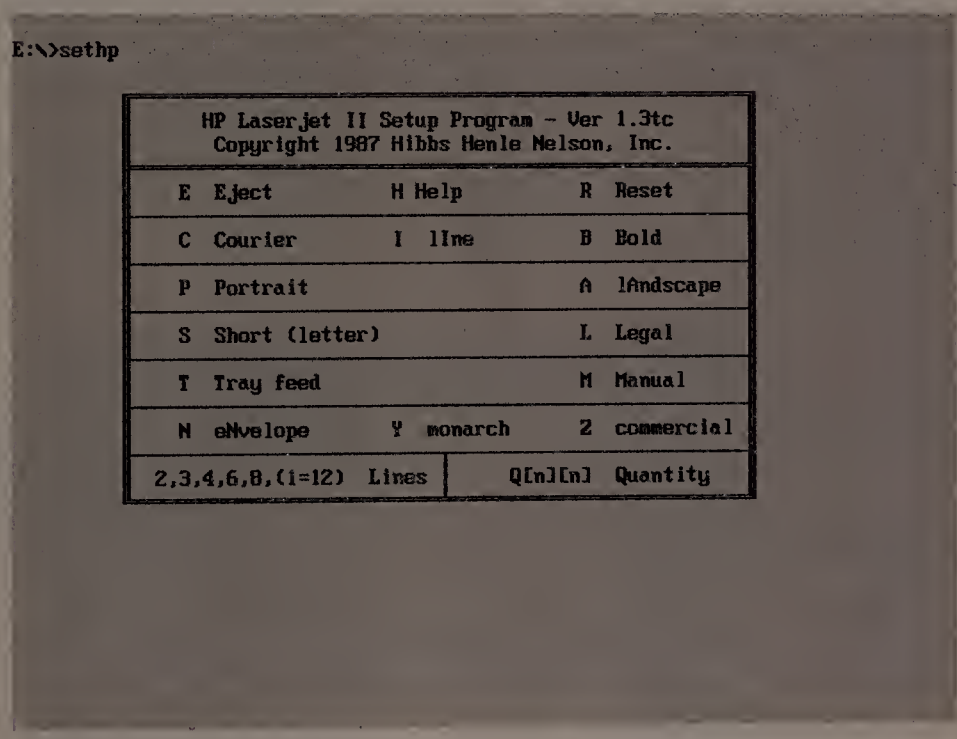
Even though your LaserJet makes your once-dull documents shine, there are many things that you can't do conveniently.

For example, many programs won't let you switch between paper trays unless you walk over to the printer. Even more draconian is the task of changing from portrait to landscape mode. But with *SETHP* you can access all the functions of your HP or compatible laser printer from the comfort of your desk chair.

An inexpensive $15 shareware program, *SETHP* works from a menu or from the DOS prompt; for example, you would type **SETHP A** to change your spreadsheet printout from portrait to landscape mode. The easiest way to use *SETHP* is to include one or more of its commands in the batch file that loads your application. You also can initiate it from inside any application that provides temporary access to DOS.

Don't expect elaborate offerings from *SETHP*. Instead, look for instant gratification when you want to eject, reset your printer, switch from the default Courier typeface to condensed print, set print quantity, or change trays. List price: $15 (shareware). Hibbs Henle Nelson Corp., 1115 Foothill Blvd., La Canada, CA 91011; 818/952-1000. —*Steve Bass*

Reader service no. 618



Sometimes it's difficult to give your laser printer what seem like simple operating instructions; this is the role that SETHP was born to fill.

take up to 14 hours on an 80MB disk; happily, you can exit the program and pick up later where you left off. Faster read/write and read-only tests are also available. Like *Htest*, *SpinRite* evaluates controller performance and notes controller retries.

Like most other good disk testers, *SpinRite* moves endangered data to safe locations and then locks out the bad sectors. But thanks to its extensive testing patterns, it offers a unique feature as well: If, after exhaustive testing, a sector that's been marked bad tests good, *SpinRite* will return it to use. (If this feature makes you nervous, you can disable it.)

The nondestructive low-level format routine lets you choose how much surface testing will accompany it, from none to the full 14-hour suite. Interleave testing is automatic, and once optimal interleave is determined, you can reset it with no loss of data. However, you can't do a destructive low-level format.

The user interface is menu-driven and easy to use, though a bit odd at times. (Strange symbols race across an on-screen disk map, but neither on-screen notes nor the thin, unindexed manual explains what all of them mean, and not all the readouts make sense.) Fortunately, *SpinRite* knows what it's doing.

SpinRite II takes top honors for disk testing and low-level formatting features. Its lack of defragging will force you to buy a second utility for that purpose, but that's less of a problem than is its inability to cope with certain hard disks. Still, if you verify that it will work on your disk before you buy, you'll find it hard to beat in its area of specialization.

Software You Can Really Use #6

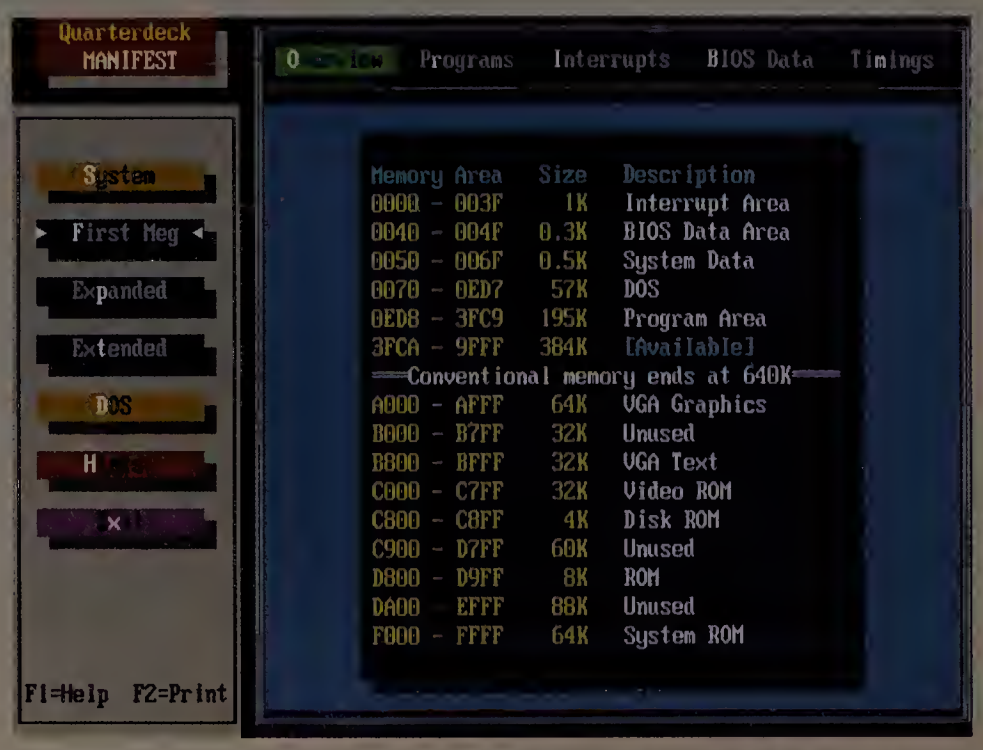
Thanks for the Memory: QRAM, QEMM, Manifest

Power users know how to grab every blessed morsel of memory in their computers. The rest of us know we can do more with the memory we have, but we're not sure how. Quarterdeck's trio of memory programs is a good place to start.

QEMM-386 works exclusively on 386 machines, *QRAM* on less powerful PCs with EEMS or EMS 4.0 expanded memory. Manifest checks your computer's memory and reports on what types and amounts exist and how it's being used.

Optimize, a utility bundled with both *QRAM* and *QEMM*, scrutinizes CONFIG.SYS and AUTOEXEC.BAT files and memory. It then loads various combinations of TSRs and drivers into expanded memory mapped between 640K and 1MB, attempting to conserve memory. I put almost every TSR I had into the AUTOEXEC.BAT file; Optimize ran *8 million* combinations—and found 70K of additional conventional memory. List price: QRAM $79.95; QEMM-386, $99.95. Each comes with Manifest. Quarterdeck Office Systems, 150 Pico Blvd., Santa Monica, CA 90405; 213/392-9851. —*Steve Bass*

Reader service no. 620



Bundled into Quarterdeck's memory-management offerings, the Manifest utility lets you see precisely what's happening within your computer's memory.

Vopt 2.2

At $60, Golden Bow Systems' *Vopt* is the least expensive package in the roundup, and while it's not fancy, it does deliver basic defragging and disk testing features. It's also very fast and fairly easy to use. However, it lacks low-level and interleave features, and it won't work on DOS 4.0 or 4.01 partitions over 65MB.

If you're satisfied with simple, read-only surface testing, you won't have any complaints about *Vopt*. It scans for bad sectors and locks out any it finds, but it cannot relocate data from those sectors.

Likewise, *Vopt*'s defragging features are fairly minimal, but they work—and at fairly high velocity; this is one of the fastest defraggers we tested. Unfortunately, there's no way to place selected files or subdirectories at the front of the

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disk. In fact there's no way to turn *Vopt*'s defragging off; once you fire it up, you're on board for the duration.

As you might expect, the interface is minimal: There's a serviceable menu but no on-screen help. You can also run the utilities from the DOS command line. An unindexed, unimpressive manual covers the ground adequately.

Low-priced and comparatively low-powered, *Vopt* represents the classic you-get-what-you-pay-for product. It comes with a number of utilities that test system performance, floppy disk drive speed, and so on, but none seems particularly useful. For an additional $20, you can get *Power Disk* with better disk testing; for $20 on top of that, you can get *Optune*, our Best Buy. *Vopt* is cheap and fast, but it isn't a smart buy.

Disk Trouble Begone!

To keep your hard disk running at its best, you need full-featured disk testing, nondestructive low-level rewrite, interleave testing and reset, and effective defragging. Only one product tested delivers all those features: *Optune*. It's a Best Buy—especially considering its rapid defragging speed and its reasonable $100 price.

SpinRite II provides the best disk-testing, low-level, and interleave features in the roundup.

"Combo" products like *Optune* can usually be bested on individual features by more specialized utilities. If nothing but the best will do for your disk, you'll want two products: *SpinRite II* provides the best disk-testing, low-level, and interleave features in the roundup (although it may not work on all disks), and *The Norton Utilities Advanced Edition 4.5* delivers the best defragging features. This combo, however, will run you $239.

Is that too much to spend to keep your disk healthy? Considering the wear and tear your nervous system undergoes when you turn on the PC that holds your company's customer data base, and see the dreaded 'General Disk Failure' message, *too much* may not be a meaningful phrase.

Michael Goodwin is an associate editor for PC World.

For more information about all products in this article, circle reader service no. 909.

WHERE TO BUY

Disk Optimizer 4.05
SoftLogic Solutions, Inc.
1 Perimeter Rd.
Manchester, NH 03103
800/272-9900, 603/627-9900
LIST PRICE: $70
REQUIREMENTS: 256K, DOS 2.0 or later version
TECHNICAL SUPPORT: toll number, M–F 9–5:30
OTHER SUPPORT: in-house BBS
Reader service no. 686

Htest 3.0
Kolod Research, Inc.
1898 Techny Ct.
Northbrook, IL 60062
708/291-1586, 708/291-1448 (fax)
LIST PRICE: $130
REQUIREMENTS: 256K, DOS 2.0 or later version
TECHNICAL SUPPORT: toll number, M–F 8–6
OTHER SUPPORT: in-house BBS, fax
Reader service no. 687

Mace Utilities 1990
Fifth Generation Systems, Inc.
10049 N. Reiger Rd.
Baton Rouge, LA 70809-4559
800/873-4384, 504/291-7221
LIST PRICE: $149
REQUIREMENTS: 256K, DOS 2.0 or later version
TECHNICAL SUPPORT: toll number, M–F 7–7
OTHER SUPPORT: in-house BBS, fax
Reader service no. 680

The Norton Utilities Advanced Edition 4.5
Peter Norton Computing
100 Wilshire Blvd., 9th fl.
Santa Monica, CA 90401
800/365-1010, 213/319-2000, 213/458-2048 (fax)
LIST PRICE: $150
REQUIREMENTS: DOS 2.0 or later version
TECHNICAL SUPPORT: toll number, M–F 8:30–5
OTHER SUPPORT: CompuServe BBS
Reader service no. 681

Optune 1.2
Gazelle Systems
42 N. University Ave. #10
Provo, UT 84601
800/233-0383, 801/377-1288
LIST PRICE: $100
REQUIREMENTS: 256K, DOS 2.0 or later version
TECHNICAL SUPPORT: toll-free number, M–F 8–6
OTHER SUPPORT: in-house BBS; E-mail on CIS and MCI
Reader service no. 688

PC-Kwik Power Disk 1.0
Multisoft Corp.
15100 S.W. Koll Pkwy.
Beaverton, OR 97006
503/644-5644
LIST PRICE: $80, for registered users of other PC-Kwik products $50
REQUIREMENTS: 384K, DOS 2.0 or later version
TECHNICAL SUPPORT: toll-free number, M–F 8–5
OTHER SUPPORT: CompuServe BBS
Reader service no. 689

PC Tools Deluxe 6.0
Central Point Software
15220 N.W. Greenbrier Pkwy. #200
Beaverton, OR 97006
503/690-8090
LIST PRICE: $149
REQUIREMENTS: 512K, DOS 3.0 or later version
TECHNICAL SUPPORT: unlimited, toll number, M–F 8–5
OTHER SUPPORT: BBS
Reader service no. 612

SpinRite II
Gibson Research Corp.
22991 La Cadena
Laguna Hills, CA 92653
800/736-0637, 714/830-2200
LIST PRICE: $89
REQUIREMENTS: 384K, DOS 2.1 or later version; won't work with Plus Hardcards, disk caches, Conner drives
TECHNICAL SUPPORT: toll number, M–F 8–5
OTHER SUPPORT: in-house BBS
Reader service no. 690

Vopt 2.2
Golden Bow Systems
2665 Ariane Dr. #207
San Diego, CA 92117
800/284-3269, 619/483-0901
LIST PRICE: $60
REQUIREMENTS: 512K, DOS 2.0 through 3.3 (works with DOS 4.0 and 4.01, but only up to 65MB partitions)
TECHNICAL SUPPORT: toll number, M–F 8–5
OTHER SUPPORT: none
Reader service no. 691

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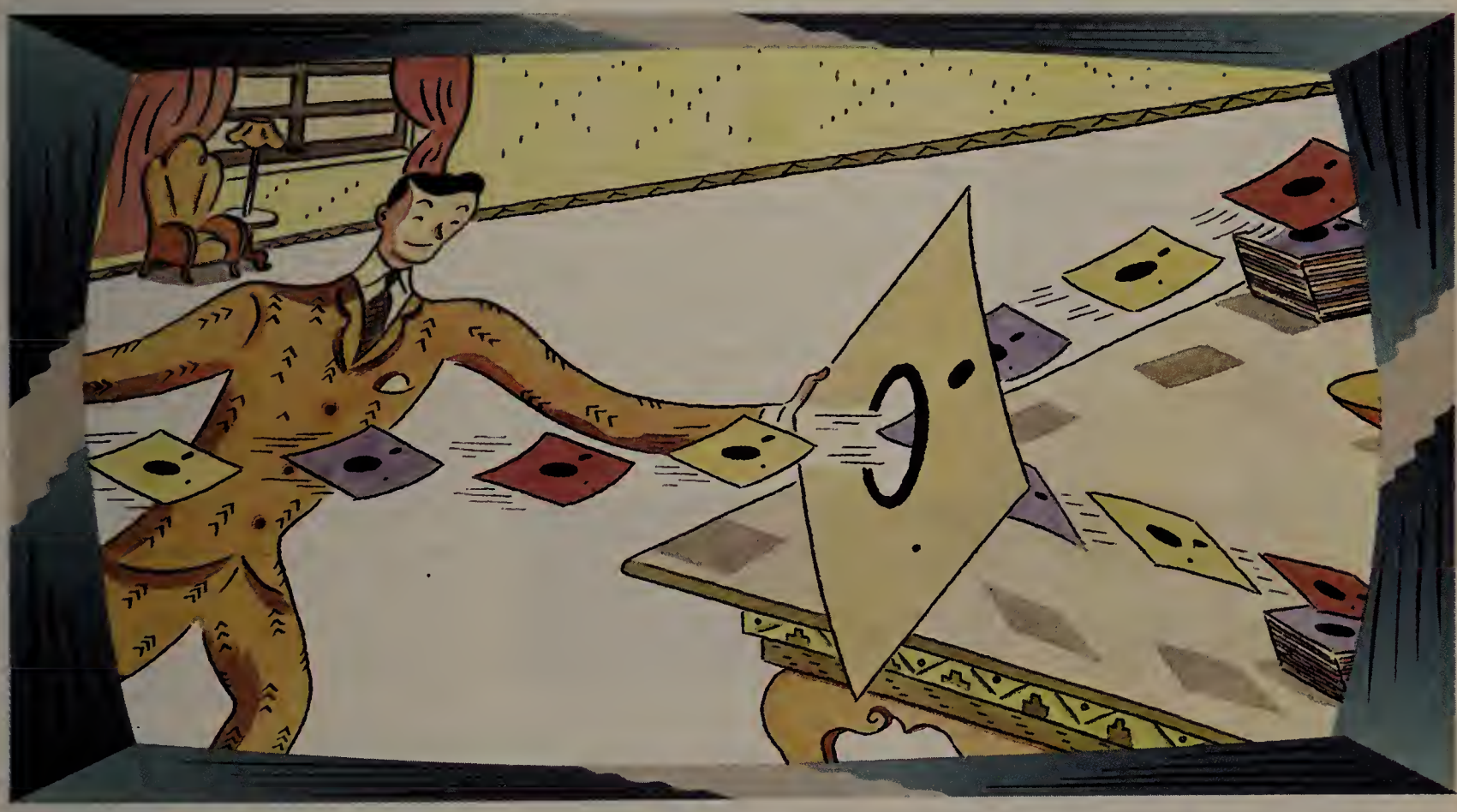
No-Excuses Backup Software

Backing up your hard disk used to be a tedious and time-consuming chore—but no more. Norton Backup and PC Tools Deluxe top the list of fast, easy backup programs.

John Walkenbach



MICHAEL KLEIN

If you've never lost an important file, you're either very new to personal computing or very lucky. With so many ways to lose data—hard disk crashes, natural disasters, errant FORMAT C: commands—a reliable backup system is a must. And unless you have a tape drive, backing up your hard disk to floppy disks is clearly the most economical way to go.

A good backup regimen includes dedicated backup software *and* a regular routine for using it. We take a look at six backup programs designed to make easy work of this often tedious chore: *BackEZ 4.0.7, Back-It 3.1, Fastback Plus 2.1, Norton Backup 1.0, PC Fullbak + 1.12,* and the PC Backup module of *PC Tools Deluxe 6.0.*

Why spend good money on a backup program when you already have DOS's BACKUP and RESTORE utilities? Basically, you get what you pay for with those utilities—they're slow, hard to use, and offer minimal error correction and data recovery features. And since BACKUP doesn't compress archived data, backing up your entire hard disk can require a hefty stack of floppy disks and a big chunk of time.

All six of the commercial backup products easily surpass DOS BACKUP and RESTORE. They perform

full and incremental backups, compress data, and offer scripts that can automate your backup routines. Although all are capable of handling typical backup chores, two programs stand out as Best Buys. Both *Norton Backup* and *PC Tools Deluxe* combine solid reliability and good performance with an easily mastered interface, making backup chores as painless as possible.

Backup Essentials

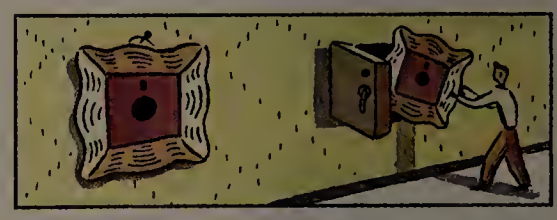
When it comes to backup software, price is a minor consideration—data security is your first concern. The data stored on your hard disk is often irreplaceable. If the backup can't be restored safely and accurately, it doesn't make any difference how much you saved on a package.

A backup program should also be easy to use. If you have to wade through a complex manual or hunt down the local PC guru just to figure out how to back up your *1-2-3* files, chances are you won't bother trying. Finally, a good program should offer enough flexibility to let you customize your backup routines, and should do its job in a reasonable amount of time. Here's what to look for:

Data Security A backup program should provide plenty of error correction and data verification options, as well as ample warning against accidental overwrites. All the products in this roundup except *BackEZ* feature advanced error correction techniques, which increase backup time but allow you to restore data even if the backup floppies are physically damaged. And all offer data verification, ranging from a simple check that the file is readable to a complete byte-by-byte comparison of the original with the backup. However, *PC Tools* and *PC Fullbak+* require you to shuffle through the backup disks a second time to compare them. More important, *PC Fullbak+* won't automatically warn you if you're about to overwrite a disk or restore an old file in place of a newer one.

Ease of Use At a minimum, a backup program should offer a treelike directory for easy file selection, let you create scripts for automating regular backups, provide detailed information about your files (size, date, time, and attributes), and tell you how much time and how many disks a backup will require. A clear menu system and good on-line help are also essential, and mouse support is a nice bonus.

All the programs can be run from menus or in batch mode from DOS, and all format floppies automatically in case



you forget to. Each lets you create scripts or configuration files to automate your backup sessions: Simply specify the types of files you want to back up (WK1, DOC, and so on), select the backup options, and save the settings in a configuration file, which you can use again and again. But only *Fastback, Norton,* and *PC Tools* offer macro recorders you can use to further automate routine backups. These three packages can be run in beginning, intermediate, or advanced mode, enabling virtually anyone in the office to use them. However, with its intuitive menus and excellent on-line help, *Norton* is the easiest package to use.

Flexibility All the programs offer the standard backup options. You can back up and restore data by drive, directory, file type or attribute, and individual file names; you can also perform full, incremental, full-copy, and differential backups. (The last two types are identical to full and incremental backups, with one key difference: They don't set the archive bit that tells DOS the file has been backed up. This allows you to copy files without affecting your regular backup schedule—a useful way to create duplicate backup sets or transfer data between machines.) However, only *Norton, Fastback,* and *PC Tools* let you select the type of backup from a menu.

Being able to work with other devices is a plus. All the programs support 360K, 720K, 1.2MB, and 1.44MB floppy

Software You Can Really Use #7

Video à la MODE: SETVID

DOS's MODE command is limited, to say the least. You can change from 40 to 80 columns (which no one has bothered doing since the first Reagan administration), and you can switch from color to monochrome. If you really want some help with today's graphics hardware, turn to *SETVID.*

This non-RAM-resident shareware package tells you the current video status and the other video modes available, allowing you to configure programs and decide what kind of graphics will work more easily. Setting a new video mode is easy from a DOS command line and effortless via a batch file. An auxiliary "find" feature tries to set all the VGA modes known to humanity and reports back which are available. It will also read the BIOS and attempt to discern which VGA chip set is installed—a boon for anyone who has to check a number of machines quickly. List price: $15 (shareware). Hibbs Henle Nelson Corp., 1115 Foothill Blvd., La Canada, CA 91011; 818/952-1000. —*Steve Bass*

Reader service no. 626

FEATURES EVALUATION

Norton and PC Tools Are Tops in Backup Game

Move over, Fastback Plus! A pair of relative newcomers, Norton Backup and PC Tools Deluxe, offer every feature of the former backup standard—and they're easier to use.

● Yes
○ No
◒ Deficient

	BackEZ 4.0.7	Back-It 3.1	Fastback Plus 2.1	Norton Backup 1.0	PC Fullbak+ 1.12	PC Tools Deluxe 6.0
Standard features						
List price	$99	$129.95	$189	$149	$99	$149
RAM required	400K	320K	335K	512K	512K	380K [1]
Multiple user levels	○	○	●	●	◒ [2]	●
File list shows size, date, and time	●	○ [3]	○	●	○	●
Supparts scripts ar configurotian files	●	●	●	●	●	●
Supparts macras	○	○	●	●	○	●
Estimates time/number of disks required	●	◒ [4]	●	●	●	●
Farmots disks during backup	●	●	●	●	●	●
Doto compressian	○	○	●	●	●	●
Cantext-sensitive an-line help	●	●	●	●	○	●
Supparts mouse	○	○	●	●	○	●
Backup options						
Tree-oriented directary togging	●	●	◒ [5]	●	●	●
Tree-oriented individuol file togging	●	○	◒ [5]	●	●	●
Includes/excludes files bosed on extensian	◒ [6]	●	●	●	◒ [7]	●
Excludes files by attribute	●	○	○	●	○	●
Appends incremental backups ta existing bockup	●	○	○	◒ [8]	●	●
Backs up by directary and file	●	●	●	●	●	●
Backs up by date ronge	●	●	●	●	◒ [7]	●
Backs up to all flappy medio	●	●	●	●	●	●
Backs up to hard disk/Bernoulli Box/LAN drive	●	●	●	●	○	●
Bocks up ta tape drive	○	○	○	●	○	●
Restore options						
Restares files ta different directory	●	●	◒ [9]	●	○	●
Selects files ta be restared by date	●	○	●	●	◒ [7]	●
Includes/excludes files by extensian	◒ [6]	●	●	●	○	●
Tree-oriented individual file tagging	●	○	◒ [5]	●	●	●
Can lacate individual files	◒ [10]	◒ [10]	◒ [10]	●	●	●
Restares fram incamplete backup set	●	●	●	◒ [11]	●	●
Data security						
Error carrection	○	●	●	●	●	●
Read-after-write verification	●	●	●	●	◒ [7, 12]	●
Campares data byte by byte during bockup	○	●	●	●	◒ [12]	◒ [12]
Warns ogoinst averwriting newer file	○	●	●	●	○	●
Worns ogoinst averwriting nonempty disk	●	●	●	●	○	●
Ignares hidden files	●	○	●	●	●	●
Password pratects backup sets	○	○	●	●	○	●
				BEST BUY		BEST BUY

[1] PC Backup module only.
[2] Using two separate programs.
[3] No file list included.
[4] Estimates disks only.
[5] Limited to 20 entries.
[6] Limited to one extension, unless defined in script.
[7] From DOS command line only.
[8] Only when using DOS commands and 1.2MB or larger floppies.
[9] Subdirectory information is lost.
[10] User must examine log file to identify backup volume.
[11] User must manually rebuild catalog of files.
[12] Separate "compare" step required.

disks, and all but *PC Fullbak+* will back up files to a hard disk, network drive, Bernoulli Box, or other devices that act like a hard disk. But only *PC Tools* works with tape drives that can't be assigned a drive letter, such as Irwin and QIC-40 drives. And while all the packages can work with disk volumes exceeding 32MB, only *Norton* lets you back up multiple logical drives in a single step—a boon for users with partitioned hard disks.

On the downside, only *Norton* won't let you continue restoring files if one of your backup disks is missing. And only *Back-It* won't let you tell it to ignore all hidden files, like those typically used by copy-protected software. When the files are restored, they will be copied to a new location on your hard disk—and the software, unable to find the files, will not work.

Performance The amount of time and disks a backup requires depends on factors such as the types of data compression, verification, and file format you choose—not to mention your response time in changing the floppies. You'll typically need between 15 and 30 minutes and 20 to 32 1.2MB floppies to back up a full 40MB of data, and significantly less for incremental backups. Our tests show that *Fastback* is fastest overall, with *Norton* and *PC Tools* close behind. Naturally, these three also offer superior data compression, each backing up 9.2MB of test data onto 5 floppies. The slowest packages, *BackEZ* and *Back-It*, required 8 disks apiece.

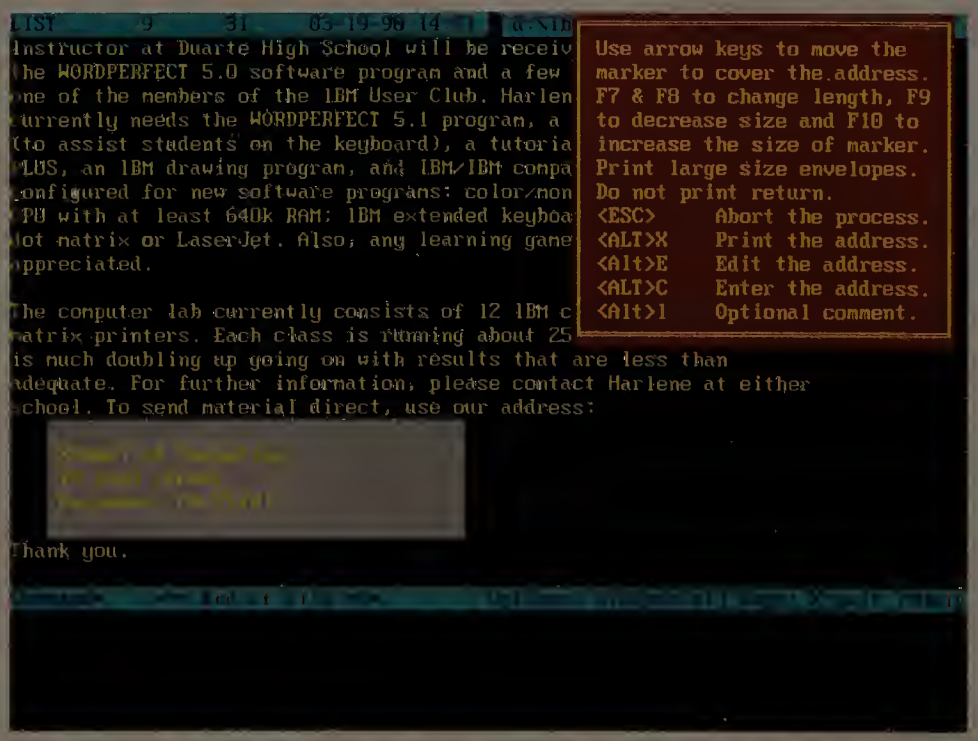
Software You Can Really Use #8

Instant Envelopes: Grab Plus

You spent over two grand on your LaserJet, and you're still asking your secretary to type envelopes with a Selectric? Well, life just took a turn for the better with *Grab Plus*—a smart envelope-addressing TSR with a built-in data base system. *Grab Plus* pops up on the screen in your application and lets you point at the address in your document, adjust the window, pick up the contents, and print an envelope in less time than it takes to thread labels into your old dot matrix.

The program needs a little over 38K and works with just about any laser printer and application. You can use standard and small envelopes and set the default to print your return address with ease. If you need to create a quick address from scratch, select the Manual Address Entry Window, and up pops a window in which to enter the data. List price: $29.95 (shareware and over the counter). ZPAY Payroll Systems, 3516 Ruby St., Franklin Park, IL 60131; 708/671-3364. —*Steve Bass*

Reader service no. 621



When you need to mail something in a hurry, Grab Plus pops up inside your application and lets you painlessly pick up the address from your file and print it out.

BackEZ 4.0.7

Because it backs up files in their original DOS format, you could say *BackEZ* is a glorified, albeit faster, version of DOS's XCOPY utility. It lacks such features as file compression and advanced error correction, and while EZ-Logic's $99 package ties with *PC Fullbak+* as the cheapest product in the roundup, state of the art it's not. Spend a little more and you'll get a lot more.

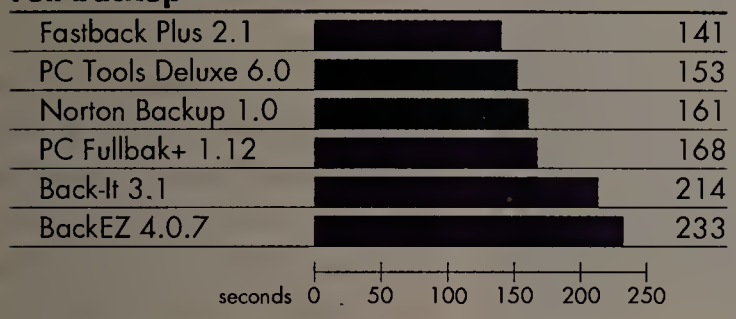
BackEZ's approach offers one clear advantage: You don't need a copy of the program to restore your files. Even if a file extends across multiple backup floppies, you can easily restore it using DOS's COPY /B command. But without data compression and advanced error correction techniques for recovering data from damaged disks, *BackEZ* is both slower and less reliable than other packages.

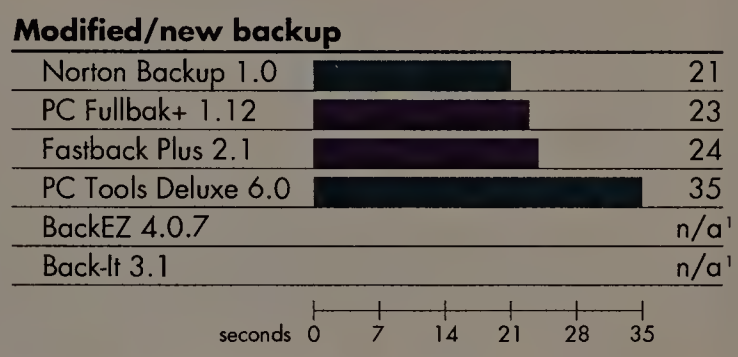
BackEZ is fairly straightforward and performs its mission with minimal flash. A treelike display makes it easy to tag and untag specific directories or files. Once a group is selected, you can save the selections to a script file to reuse later. *BackEZ* scripts are similar to batch files; to change an existing

Floppy Backups: Speed Isn't Everything

Fastback Plus is still the speed king, but Norton Backup and PC Tools Deluxe are right behind—and their more congenial interfaces make them Best Buys.

■ Best Buy





[1] Does not support data compression.

Methodology
Benchmarks were conducted using a Compaq Deskpro 286 Model 20 with 1MB of RAM, DOS 3.31, and a 20MB hard disk. CONFIG.SYS was used to set FILES and BUFFERS equal to 25. The system hard disk contained 25 directories and a mixture of 322 program, spreadsheet, document, and data base files occupying about 9MB of disk space. The backup program was installed in its own directory on the hard disk, and 5¼-inch, high-density floppy disks formatted to 1.2MB were used as the backup medium.

Full backup
All the data on the hard disk, except the directory containing the backup program, is backed up to floppy disks. Timing begins when the program prompts for a disk and excludes disk swapping times.

Full restore
This test measures the time required for each program to fully restore the data backed up in the previous test to the formatted hard disk.

Modified/new backup
After a full backup is performed, approximately 1MB of data base, spreadsheet, and document files are modified. The program is then instructed to use partial data compression to back up the files.

Backup to unformatted disks
A badly fragmented hard disk with eight files occupying 76 different areas of the hard disk is backed up to unformatted floppy disks. Benchmarks include formatting times.

Data based on tests designed and conducted by National Software Testing Laboratories (NSTL), Conshohocken, PA 19428. All rights reserved.

script, you use the program's script editor to add or delete Include and Exclude commands.

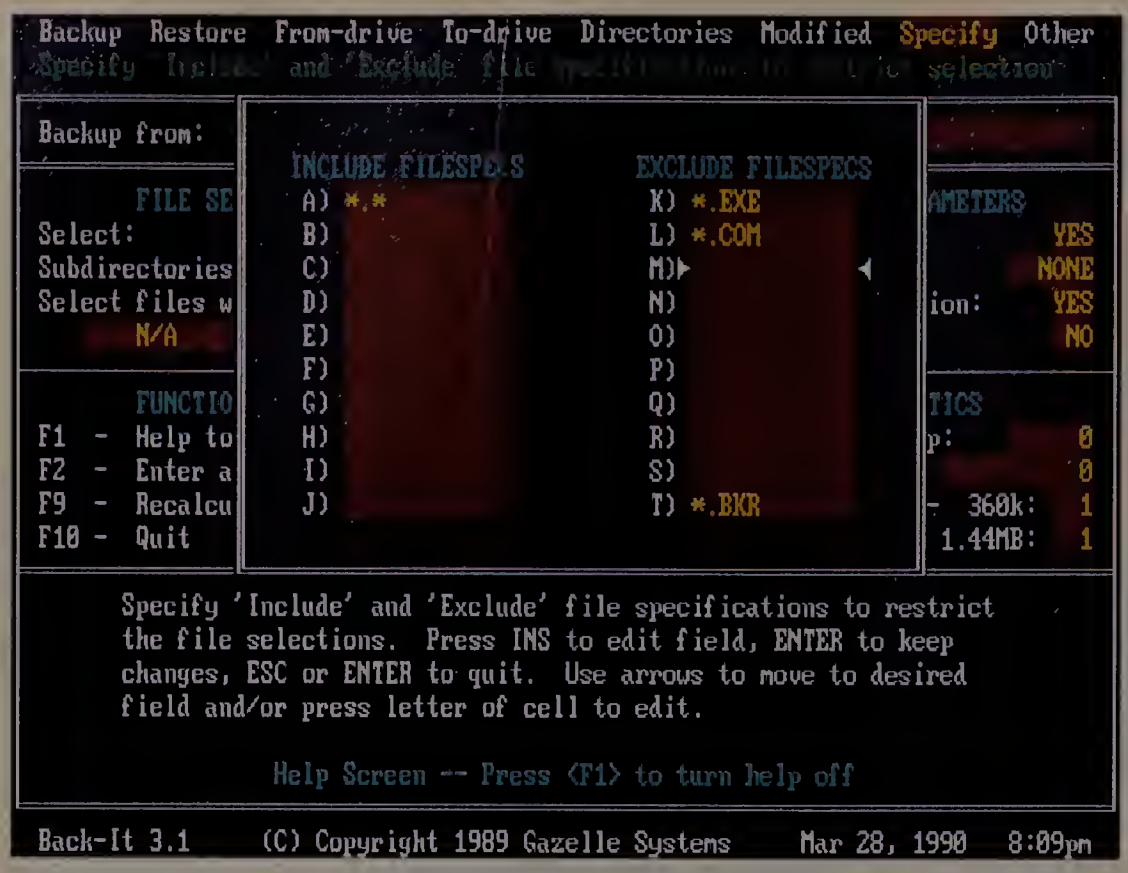
Like *Back-It* and *Fastback*, the program won't automatically identify the proper disk when you want to restore a single file, forcing you to swap disks or hunt through a log file. Performance is the poorest of the bunch, and the lack of data compression means you'll need lots more floppies.

BackEZ keeps your backup files easily accessible—even without the backup program—but it's slow, it can't compress files, and its data security is shaky. *BackEZ* is clearly not up to the standards set by *PC Tools* and *Norton*.

Back-It 3.1

Gazelle Systems' $130 *Back-It 3.1* offers plenty of data integrity options, but its directory tree doesn't list individual files, and it lacks common features like data compression. More important, *Back-It*'s sometimes confusing interface can make restoring data difficult, and it shouldn't be used to back up or restore copy-protected software. Spend the extra $20 for *Norton* or *PC Tools*.

Back-It's strong suit is data security. It provides abundant warnings against accidental overwrites and offers an error correction feature that can reconstruct up to 160 sectors on a damaged floppy. In addition, you can choose a verification mode similar to DOS's VERIFY command, which checks that the backup file is readable and the same size as the original, or a "super verification" option that compares files byte by byte as they are written (increasing



Back-It sports a somewhat cluttered interface, and to perform a selective backup, you must type in file types to include or exclude.

backup time by 5 to 10 percent).

But *Back-It*'s interface leaves much to be desired. Its lack of a directory tree file list makes it difficult to select individual files for backup. To perform a selective backup, you must tag specific directories or manually type in up to ten Include and ten Exclude commands, such as Exclude *.BAK. But unlike with *Fastback Plus*, you can only use DOS wild cards globally, not in individual directories. For example, you can't exclude all *.BAK files in just your \WORD directory. Even worse, the only way to avoid backing up hidden files is to exclude each one by name—which means you'll need a utility like *Xtree* or *Norton Commander* that displays the names of hidden files.

Back-It's command options are not always crystal clear, especially in the Restore submenu. It's sometimes difficult to tell which mode you're in, and you can easily start restoring all files when you intended to get only one. If you need to restore a single file from a set of backup disks, you must insert each disk until the file is located, or hunt through a log file to find the right disk.

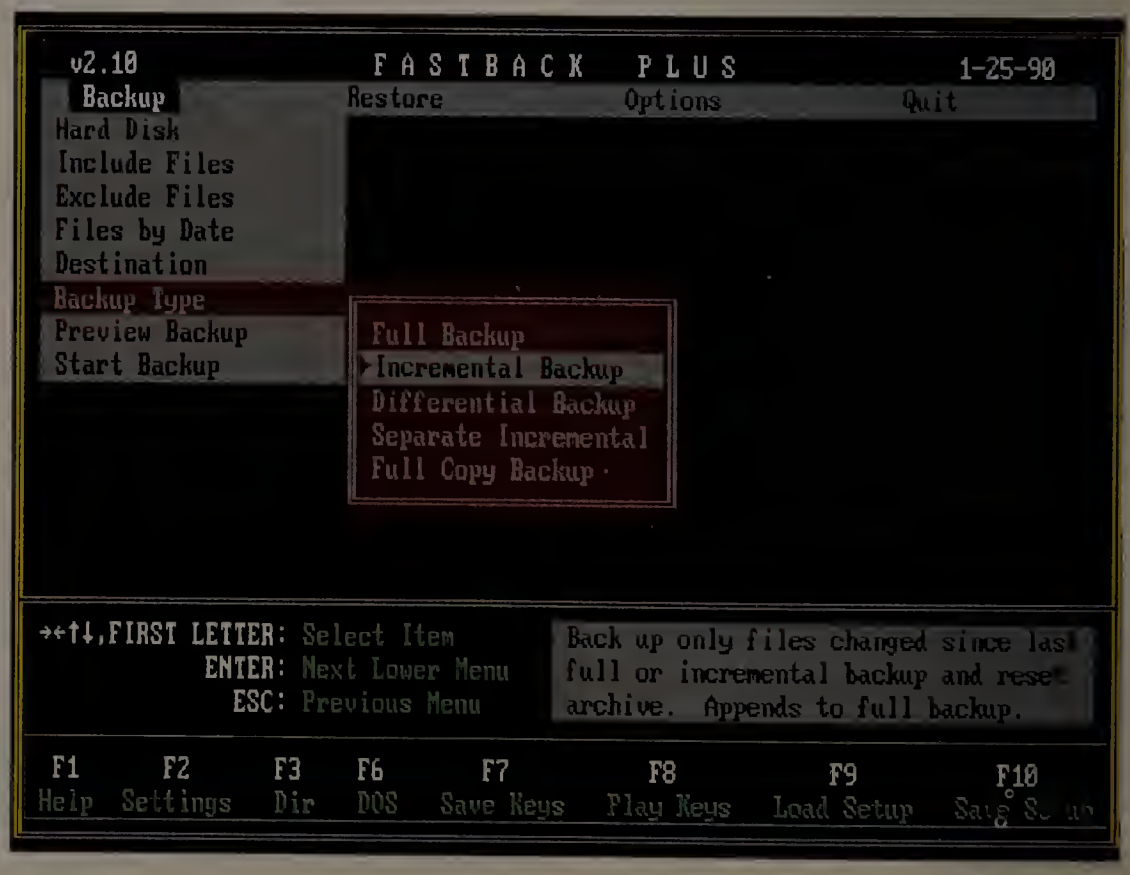
A unique feature of *Back-It* is the ability to pause a file restore so you can change settings in midstream. For example, you can change overwrite mode, warning prompts, and even file specifications. *Back-It* lets you save backup configurations called Presets that make it easy to back up specific types of files. Just load the program and select the appropriate Preset file to back up, say, all your WK1 files. But while *Back-It* can handle a virtually unlimited number of Preset files, it displays only the first eight—to use any other Preset file, you must type in its name.

Although it's flexible, *Back-It* isn't fast, registering times near the back of the pack in our tests. And since the program can't compress files, you'll need to use more floppy disks to make your backups.

Back-It 3.1 scores high in the data security department, but it lacks basic features like a file list and data compression, and its inability to ignore hidden files knocks it out of the running. Version 4.0, due to ship in May, should fill in some of the gaps, offering data compression, faster backup, and direct support for tape drives. Until then, stick with *Norton* or *PC Tools*.

Fastback Plus 2.1

True to its name, Fifth Generation Systems' *Fastback Plus* is the fastest program reviewed, and it's packed with features as well. This $189 package domi-



Fastback Plus's pulldown menu system makes it easy to select the type of backup you want. However, the program's limited mouse support and minimal file information exclude it from the winner's circle.

nates the market because it was one of the first programs to combine superb performance with rock-solid backups. But *Fastback*'s interface is clumsy compared with those of its newer competitors, and the program doesn't provide key file information. All things considered, both *Norton* and *PC Tools* give you more for less.

Fastback offers the full complement of data safety features—error correction, data verification, and plentiful warnings against accidental overwrites. You can turn off verification, verify that the sectors on the backup disk are readable, or choose full byte-by-byte verification, the slowest (but most reliable) option. Fifth Generation clearly takes backup seriously: The user manual provides extensive coverage of backup philosophy as well as a variety of tips and techniques.

Fastback's interface is easy to maneuver, but it's no match for *Norton*'s or *PC Tools*'. It supports a mouse but lacks a free-roaming cursor; instead, the mouse clumsily moves the menu highlight through the options. And file status information is minimal, lacking such important details as file size, date, and archive status. However, as with *Norton* and *PC Tools*, you can set the program to run in beginner, experienced, or advanced mode.

To select files, you must insert file specs into Include and Exclude lists. For example, you can exclude all EXE and COM files from the backup by using DOS wild-card commands. You can specify as many as 20 Include and 20 Exclude entries for each backup. And you can call up a file list to help you out—highlight a directory or file and press <Insert> to transfer the file spec to the appropriate list—or simply scroll through your directory tree and tag up to 20 directories or files. A separate menu option lets you select files by date.

As with the other programs, you can automate the process using setup files. Just set up your backup as normal, then press <F10> to save the configuration. To load a preset backup, press <F9> and select the desired preset file from a list, or type FB *@filename* at the DOS prompt.

Like *Norton* and *PC Tools*, *Fastback* offers a macro facility that lets you record menu selections and dialog box entries, then run the macro from DOS, further automating the backup process. You can even protect backed-up data with a password, a talent the program shares with *PC Tools*. However, there's no dynamic status line showing total

EXECUTIVE SUMMARY

Norton and PC Tools Make Backing Up Easy

Six programs for fast floppy backup of hard disk data

The best programs reviewed here let you back up your hard disk quickly and easily, offering sophisticated data security features, a wide range of backup options, and the ability to automate the process using scripts.

BEST BUY

Norton's superior on-line help system and informative directory tree give it a slight edge, but **PC Tools'** support for tape drives and a bevy of other utilities make the package an undeniable bargain. Also notable is **Fastback Plus,** which offers the best performance and most of the features of the two Best Buys but falls short in the interface department.

	BackEZ 4.0.7	Back-It 3.1	Fastback Plus 2.1	Norton Backup 1.0	PC Fullback+ 1.12	PC Tools Deluxe 6.0
Data security	Foir	Good	Excellent	Excellent	Poor	Excellent
Backup and restore options	Foir	Good	Good	Excellent	Foir	Excellent
Performance	Poor	Fair	Excellent	Excellent	Foir	Good
Ease of use	Good	Foir	Good	Excellent	Poor	Excellent
Overall value	Foir	Foir	Good	Excellent	Poor	Excellent
				BEST BUY		BEST BUY
Reader service no.	710	711	712	713	714	612

How we rate backup software
We rate backup software based on information in the Features Evaluation table and the NSTL Test Report, combined with our opinion of quality, reliability, ease of use, and user benefit.

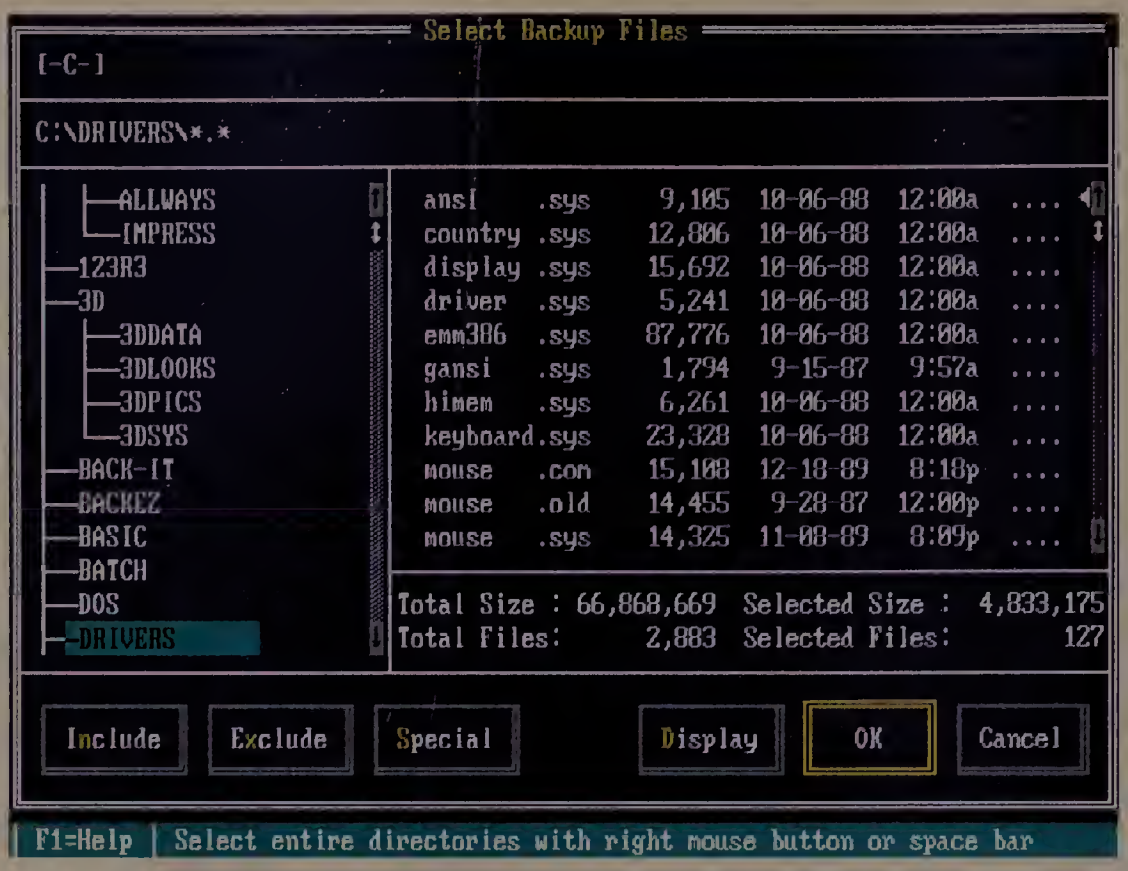
Data security is the critical buying issue: An Excellent rating means a product uses error correction and data validation techniques, can recover data from a damaged backup disk, ignores hidden files, and warns you if you're about to overwrite a disk or restore an old file in place of a newer one.

Backup and restore options rates a program's flexibility in backing up and restoring data. An Excellent rating means the program performs standard tasks (full, incremental, full-copy, and differential backups), supports DOS devices such as hard disks and Bernoulli Boxes, and provides maximum flexibility in including and excluding files.

Performance measures the results of four different speed tests. High-scoring packages receive an Excellent rating.

Ease of use measures how intuitive and accesible a program is, and applies to all the criteria. To win an Excellent rating, a program must let you select files from a treelike directory display, provide detailed on-screen file information (including size, date, time, and attributes), and offer scripts or configuration files for automating routine backups. Context-sensitive on-line help and multiple user levels are also key.

Overall value averages all the above criteria, plus price.



With Norton Backup, you can easily tag complete directories or individual files to be backed up. The detailed file list on the right changes as you traverse the directory tree in the left window. The status window shows the total number and cumulative size of the selected files.

backup size and number of floppies required (you must select a separate menu command), and restoring individual files is a bit of a chore.

Test results show *Fastback Plus 2.1* to be the overall speed champ, though not by much. When specifying a backup, you can opt for data compression and error correction—with the usual sacrifice in speed. The program's data compression is on a par with *Norton*'s and *PC Tools*' and superior to that of the other products reviewed.

Fastback Plus, long the market leader, has finally met with some tough competition. It's still the raw speed king, but unless your organization is committed to this product, *Norton* and *PC Tools* meet or exceed it in just about every area—and at a lower cost.

Norton Backup 1.0

Norton Backup clearly excels in ease of use, yet it doesn't compromise performance or features. It's the only product reviewed that can back up from multiple logical drives in one operation, and its slick on-line help system makes the manual superfluous. At $149, this entry from Peter Norton Computing easily earns our Best Buy award.

Norton Backup boasts all the features you expect in a top-notch backup program: data compression and verification, error correction, script files, user macros, and a clear and consistent user interface designed for both mouse and keyboard fans. You can choose from simple read verification or complete byte-by-byte verification. *Norton* provides an additional verification option that fully compares only a sample of the tracks written—a nice compromise between efficiency and reliability.

Novices and pros alike will appreciate *Norton*. The menu system is intuitive, and it's always obvious what your options are. You can run the program in basic, advanced, and preset modes and call on hand-holding context-sensitive help. Preset mode lets you run hands-off backups with user-defined configuration files—ideal for turnkey backups conducted by novices. Creating a configuration file is simple: Just set up your backup as normal, then choose the Set-up File option to record the session. Files can be given 24-character descriptions such as 'Daily Incremental Backup' for easy identification.

To select files manually, you simply tag them on a scrollable directory tree.

Software You Can Really Use #9

Bargain-Basement EMS: AutoSwap

AutoSwap is a no-nonsense approach to swapping your current application to disk (or RAM disk) and moving into another program. Imagine that you want to run a word processor from inside FoxPro. Load FoxPro inside AutoSwap from the DOS command line (**as foxpro**); then, any time you want to fire up the word processor, just issue a call through the FoxPro RUN command, and AutoSwap will utilize all available memory.

In fact, any program that lets you exit to DOS can team up with AutoSwap. The program will swap to expanded memory by default, although it can be set to swap to disk or RAM disk. The more than adequate documentation explains how to use the AUTOEXEC.BAT file to set up AutoSwap so it can utilize the RAM disk. List price: $49, network version $199. The Lambda Group, 555 De Haro St. #300, San Francisco, CA 94107; 800/873-7927, 415/626-4545. —*Steve Bass*

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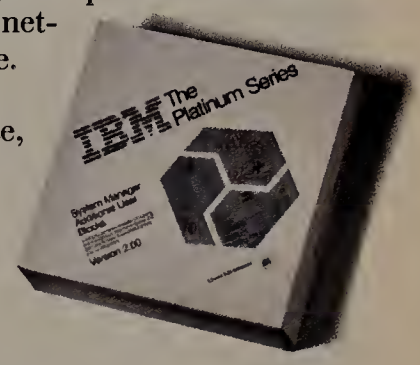

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You can sort files by name, size, extension, date, or attribute, and use filters (like *.WK1) to view selected file types. You can also include or exclude specific file types globally or for each directory: Simply select the include or exclude option and type the file parameters into a dialog box. To restore a single file, just highlight the file name on *Norton*'s directory tree. The program provides a running estimate of the number and total size of selected files. During the backup, *Norton* displays actual computer time, plus the time you spent pausing while changing disks.

Particularly useful is the ability to let you specify that more than one logical drive is to be backed up. If your hard disk has multiple partitions, this feature alone might make it your product of choice. For added security, a log of backed-up files is stored on your hard disk as well as on the backup media.

Norton is fast, giving *Fastback* a run for the money and beating it in incremental-backup tests. At press time, Norton Computing was planning to ship version 1.1, which it claims will be significantly faster than version 1.0.

But *Norton* is not without flaws. If you're restoring a backup set and one of your disks is missing or badly damaged, you'll have to start over, manually reselecting the files you wish to restore. And *Norton* won't let you append incremental backups to existing backup sets during normal high-speed operations, which means you'll have to keep track of more disks.

Still, *Norton Backup* has a lot going for it, and it can handle just about any backup job with ease. If you're new to backup software or a pro who's tired of hassling with convoluted menu systems, *Norton Backup* is for you.

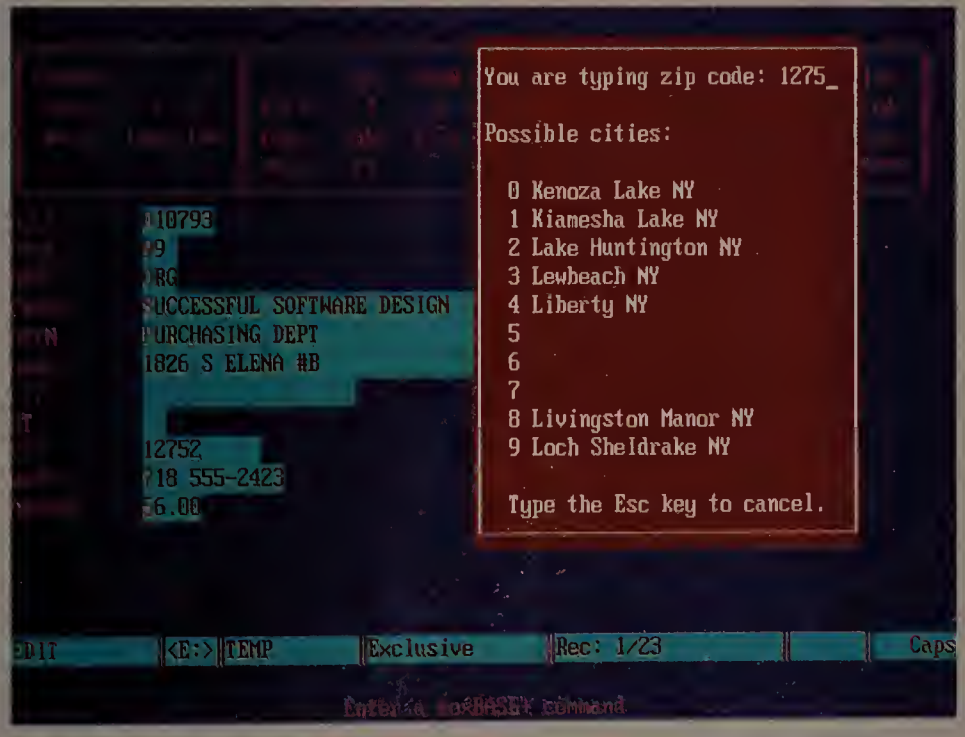
Software You Can Really Use #10

A Zillion ZIP Codes: Zipkey

Zipkey is a shareware program that does just one thing—but boy, it does it well. Imagine this: You're working in a data base. You pop over to the ZIP code field. You type in the ZIP code, and a 128K TSR instantly sticks the city name and the two-letter state abbreviation in the right fields. That saves 20 or more keystrokes and guarantees the correct spelling of *Manhattan Beach* and *Hauppauge*.

Zipkey is a complete city-level directory of U.S. ZIP codes, combined with a keyboard enhancement program. With it, you need never again type in the name of a city. *Zipkey* gives you instant access to any of the 43,000-plus ZIP codes in the directory, searching by ZIP code, state and city, or city only. The package achieves its full potential as a TSR, but you can run it as a regular program to look up an occasional ZIP code. The author updates the data base monthly. List price: $30 (shareware), plus $25 per year for updates. Eric Isaacson Software, 416 E. University Ave., Bloomington, IN 47401-4739; 812/339-1811. —*Steve Bass*

Reader service no. 623



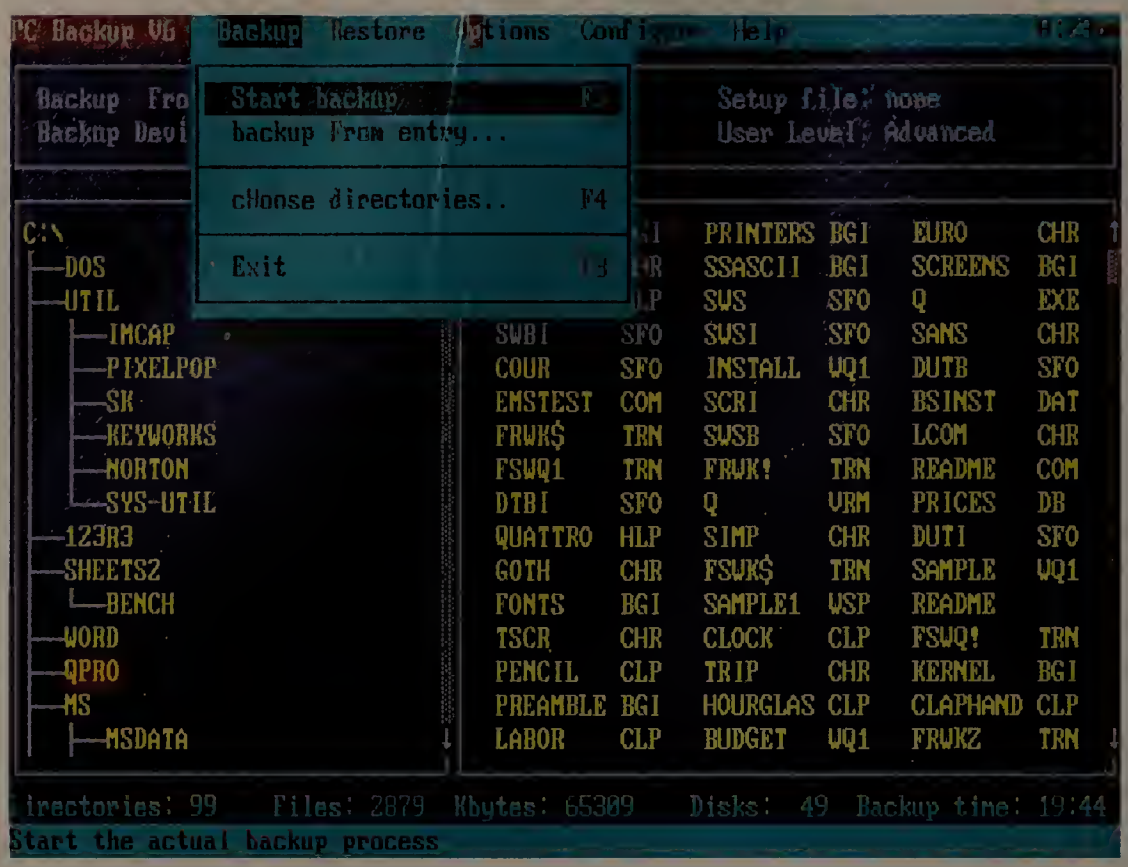
Zipkey can pop up inside a data base manager or other application and automatically give you the proper city and state once you enter the ZIP code.

PC Fullbak+ 1.12

With its minimal error-handling facilities and less-than-intuitive interface, this $99 package is no bargain. Westlake Data's *PC Fullbak+* is limited to floppy-only backup of FDISK-partitioned hard disks, doesn't display important file information, and offers no on-line help. You can do better.

PC Fullbak+ lacks some basic error-handling features. For instance, if you insert a floppy disk that has data on it, the program gives you no warning; it formats the disk immediately, wiping out any good data that may have been there. During a file restore, *PC Fullbak+* warns you if the file already exists but withholds the one piece of information you need: whether the existing file is newer than the backup version.

You can tag specific directories or files to back up, but the file list is by



PC Tools' backup module offers a file tree display but doesn't show specific details. However, the status line on the bottom keeps a running tab of the number of files, their total size, and the estimated number of disks and approximate time required for the backup.

name only and provides no information on file size or creation date. Also missing is any kind of on-line help—and this is one product that needs it, because some of the choices aren't obvious. For example, to expand the directory tree to show files, you must press the <Insert> key—something you can learn only by digging through the manual.

Oddly enough, some important features—such as selecting files by date, verifying after writing, and not changing the archive bit—are available only if you run the program from the DOS prompt. And rather than provide multiple user levels, Westlake Data added a simplified version of the full program called *PC Fullbak+EZ*.

Prior to running a backup, you can request an estimate of the time required and the number of floppies needed. *PC Fullbak+*'s backup speed and data compression are mediocre, falling in the middle of the range.

Another reason to think twice before buying: *PC Fullbak+ 1.12* can back up files only to floppy disks. (The company claims that version 2.0, scheduled to ship in mid-1990, will support hard disks, Bernoulli Boxes, and popular tape drives.) Worse, the manual warns against using *PC Fullbak+* with hard disks that are partitioned with software other than DOS's FDISK (such as Storage Dimensions' *SpeedStor*). It also warns against backing up files from one system and restoring them to another—a common use for programs of this ilk.

Throw all its other useful utilities into the equation, and PC Tools Deluxe may just be the software bargain of the year.

In the final analysis, *PC Fullbak+ 1.12* is too seriously flawed to be considered. Version 2.0 seems to be a step in the right direction, but until *PC Fullbak+* improves its error handling and interface and adds support for third-party disk partitioners, it should be avoided.

PC Tools Deluxe 6.0

A backup program is just one of many handy tools in Central Point Software's comprehensive utility package (see "Hard Disk Health Insurance" in this issue). Contrary to what might be expected from this software Swiss army knife, the backup module of *PC Tools Deluxe* is quite sophisticated, fast, and easy to use. Its only drawback (and a minor one at that) is the minimal file information provided by the program's directory tree. At $149, *PC Tools* ties with *Norton Backup* as the Best Buy in the roundup.

PC Tools offers a full set of file compression, data verification, and error correction features. You can choose the standard DOS format or use a proprietary format that will squeeze one extra sector of data per track onto your floppies.

As with *Fastback* and *Norton*, you can choose from beginner, intermediate, and advanced user levels. The product works best with a mouse, but the well-designed interface won't put keyboard users at a disadvantage. Context-sensitive help is available at any time, but it lacks the depth of *Norton*'s help system. The backup program doesn't have a macro feature per se, but a separate macro utility included in the package can be run as a TSR.

When setting up your backup, you can easily select specific directories or files from a directory tree. A drawback that this module shares with *Fastback* is the lack of any accompanying file information—you get the name only. However, the program keeps a running tab of the number of floppy disks required, the number of files, the total size of the backup, and the estimated time to complete it. As an alternative to manually selecting directories and files, you can specify up to 16 include/exclude instructions per backup set. As with the other

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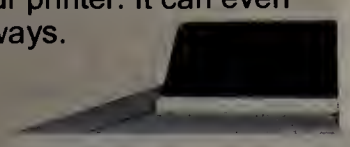

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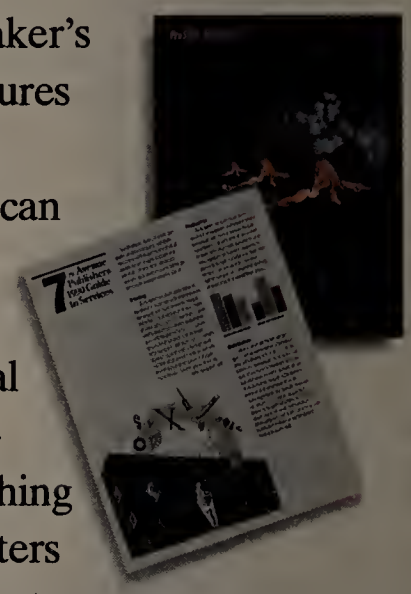

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programs, you can save these configurations in a setup file and use them over and over. You can also protect sets of backup floppies with a password.

As with *Norton*, locating individual files in your backup set is easy. Just highlight the file on *PC Tools*' directory tree, and the program tells you which disk to insert. If your backup set gets shuffled or you label the disks incorrectly, a separate utility will analyze the disks and get you straightened out. This utility also generates a detailed report listing your backup files, the type of media used, error correction and verification options, and more.

In NSTL tests, *PC Tools* proved fairly fast, vying with *Norton* for second place. Another selling point: *PC Tools* is the only backup program reviewed to support Irwin and QIC-40/QIC-80 tape drives, which means that if you ever upgrade to a tape system, you can keep using your old familiar software. The program also lets you set up appointments for unattended tape backups.

Considered strictly as a backup program, *PC Tools* is a fine piece of work that goes nose to nose with *Norton*. Throw all its other useful utilities into the equation, and *PC Tools Deluxe* may just be the software bargain of the year.

Choose It and Use It

The world of backup software is clearly divided into the haves and the have-nots, with *Back-It*, *BackEZ*, and *PC Fullbak+* falling into the latter category. *Fastback Plus* is fast and full of features, but its interface can't quite match those of its newer competitors.

If you're looking for an all-in-one solution, *PC Tools Deluxe* may be your bag. A single purchase will supply you with a full lineup of useful DOS utilities, not the least of which is a backup program that's easily on a par with the best stand-alones. And for overall ease of use and maximum flexibility, you can't go wrong with *Norton Backup*—an all-around winner that's also amazingly speedy. Both products prove worthy of a *PC World* Best Buy.

Whatever you pick, develop a backup system that works for you—and use it religiously. ◆

John Walkenbach is vice president and market research manager for a leading savings and loan association headquartered in Southern California.

For more information about all products in this article, circle reader service no. 910.

POWER TIP NO. 111

Synonym Searches With Word

When you're trying to embellish a humdrum sentence by choosing a sprightly synonym, it helps to see your new word choice in context. Here's a simple (and undocumented) way to team *Word 5.0*'s thesaurus with the undo command to test-drive that potentially perfect word. Position the cursor on the appropriate word, press **<Ctrl>-<F6>** to open the thesaurus, highlight a synonym, and press **<Enter>** to replace the original word. Now you can press **<Esc>U** to flip between the original and the alternative. If the synonym doesn't add the flair you're looking for, press **<Ctrl>-<F6>** to continue the search.

Mick Brown
Dallas, Texas

WHERE TO BUY

BackEZ 4.0.7
EZ-Logic, Inc.
1231 Voncouver Woy
Livermore, CA 94550
800/635-6442,
800/544-4353 Colifornio, 415/949-2834
LIST PRICE: $99
REQUIREMENTS:
400K, DOS 2.0 or later version
TECHNICAL SUPPORT:
unlimited, toll number, M–F 8–6
OTHER SUPPORT:
none
Reader service no. 710

Back-It 3.1
Gozelle Systems
42 N. University Ave.
#10
Provo, UT 84601
800/233-0383,
801/377-1288
LIST PRICE: $129.95
REQUIREMENTS:
320K, DOS 2.0 or loter version
TECHNICAL SUPPORT:
unlimited, toll-free number, M–F 8–5
OTHER SUPPORT: 30-doy money-bock guorontee, BBS, CompuServe ond MCI Moil support
Reader service no. 711

Fastback Plus 2.1
Fifth Generotion Systems, Inc.
10049 N. Reiger Rd.
Boton Rouge, LA
70809-4559
LIST PRICE: $189
REQUIREMENTS:
335K (640K recommended), DOS 2.1 or loter version
TECHNICAL SUPPORT:
unlimited, toll number, M–F 7–7
OTHER SUPPORT: BBS, newsletter
Reader service no. 712

Norton Backup 1.0
Peter Norton Computing Inc.
100 Wilshire Blvd., 9th fl.
Sonto Monico, CA 90401
213/319-2000
LIST PRICE: $149
REQUIREMENTS:
512K, DOS 3.1 or loter version
TECHNICAL SUPPORT:
unlimited, toll number, M–F 9–5
OTHER SUPPORT:
none
Reader service no. 713

PC Fullbak+ 1.12
Westlake Dato Corp.
P.O. Box 1711
Austin, TX 78767
512/328-1041
LIST PRICE: $99
REQUIREMENTS:
512K, DOS 2.0 or later version
TECHNICAL SUPPORT:
unlimited, toll number, M–F 8–5
OTHER SUPPORT:
quarterly newsletter
Reader service no. 714

PC Tools Deluxe 6.0
Central Point Software, Inc.
15220 N.W.
Greenbrier Pkwy.
#200
Beaverton, OR 97006
503/690-8090,
503/690-8083 (fax)
LIST PRICE: $149
REQUIREMENTS:
380K, DOS 3.0 or later version
TECHNICAL SUPPORT:
toll number, M–F 8–5
OTHER SUPPORT: BBS
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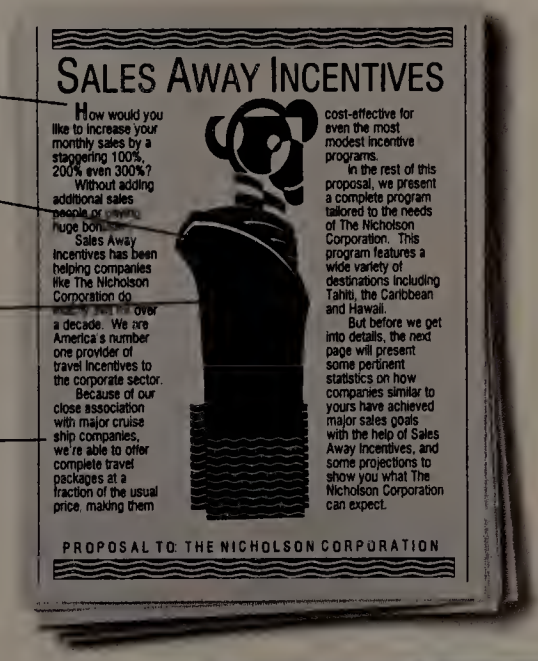

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In the rest of this proposal, we present a complete program tailored to the needs of The Nicholson Corporation. This program features a wide variety of destinations including Tahiti, the Caribbean and Hawaii.

But before we get into details, the next page will present some pertinent statistics on how companies similar to yours have achieved major sales goals with the help of Sales Away Incentives, and some projections to show you what The Nicholson Corporation can expect.

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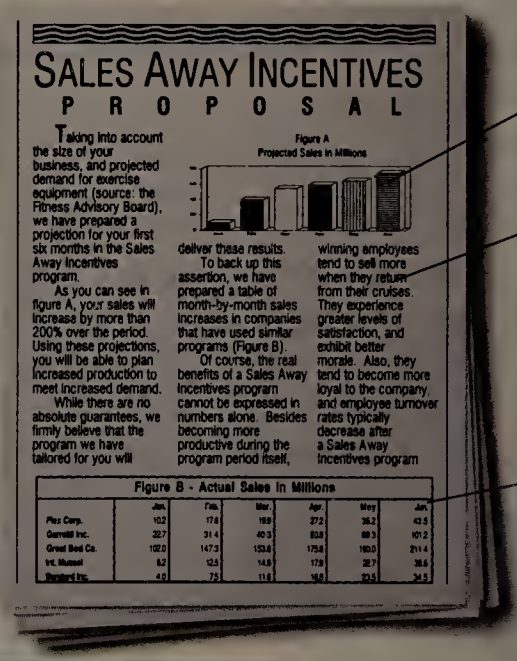


SALES AWAY INCENTIVES

PROPOSAL

Taking into account the size of your business, and projected demand for exercise equipment (source: the Fitness Advisory Board), we have prepared a projection for your first six months in the Sales Away Incentives program.

As you can see in figure A, your sales will increase by more than 200% over the period. Using these projections, you will be able to plan increased production to meet increased demand.

While there are no absolute guarantees, we firmly believe that the program we have tailored for you will deliver these results.

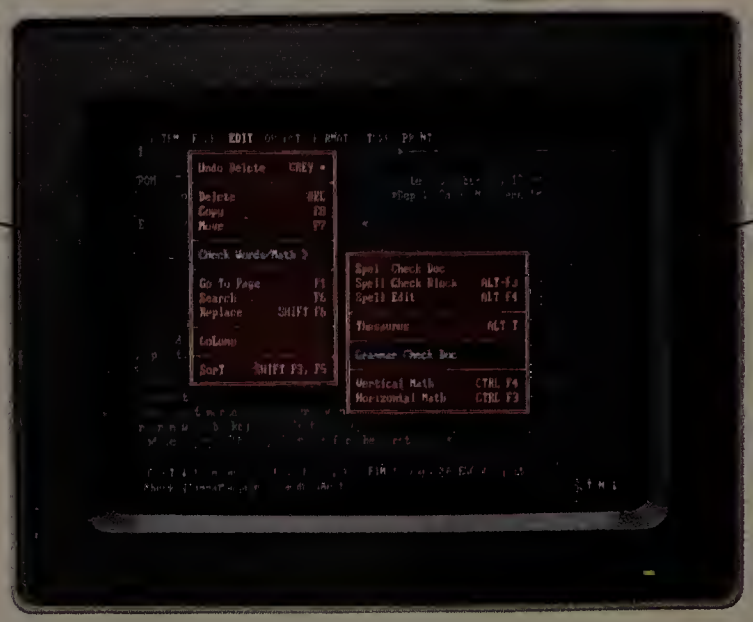
Figure A
Projected Sales in Millions

To back up this assertion, we have prepared a table of month-by-month sales increases in companies that have used similar programs (Figure B).

Of course, the real benefits of a Sales Away Incentives program cannot be expressed in numbers alone. Besides becoming more productive during the program period itself, winning employees tend to sell more when they return from their cruises. They experience greater levels of satisfaction, and exhibit better morale. Also, they tend to become more loyal to the company, and employee turnover rates typically decrease after a Sales Away Incentives program

Figure B - Actual Sales in Millions

	Jan.	Feb.	Mar.	Apr.	May	Jun.
Flex Corp.	10.2	17.8	19.9	27.2	36.2	43.5
Garrett Inc.	22.7	31.4	40.3	83.8	89.3	101.2
Great Bed Co.	102.0	147.3	153.8	175.8	180.0	211.4
Int. Mussel	8.2	12.5	14.9	17.9	28.7	38.6
Rockard Inc.	4.0	7.5	11.8	16.8	23.5	34.5



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Playing for Time: Five Personal Schedulers

Throw away that bulging notebook—a PC-based appointment manager gives you a new perspective on your daily agenda.

Eric Brown

SCOTT BALDWIN

You probably don't have time to read this review. Small wonder. Your business day is swept away in a deluge of meetings and appointments, and you move from event to event like an Olympic sprinter. Heaven help you if you try to schedule the day with a wall calendar and a prayer. If you falter in the race against time, you'll face scheduling conflicts, missed appointments, botched deadlines, and angry clients.

The first allies that businesspeople discovered were portable organizers such as the DayTimer or Lefax. But today, an increasing number are managing appointments on a PC. Although scheduling packages are limited by the fact that they're chained to your desk, they beat paper organizers in other areas. You can examine your schedule from different views—by month, week, day, or priority—and attach detailed notes to appointments. You can also perform tricks like automatically scheduling a meeting for the first Thursday of every other month, or displaying horizontal bars that block out your weekly schedule graphically so you can quickly pinpoint free time. With scheduling software it's far easier to postpone a date or change an entry, and you can set alarms to remind you of appointments. And some programs let you print schedules in popular organizer formats, so you *can* take it with you.

This roundup examines five personal schedulers ranging in price from $40 to $200: Power Up's *Calendar Creator Plus*, Stevenson's *Complete Calendar*, Central Point's *PC Tools Deluxe*, Pop Computer's *Reminders*, and Borland's *SideKick Plus*. Both *PC Tools Deluxe* and *SideKick Plus* are multifaceted desktop organizers, but in this roundup they're evaluated only for their scheduling features. They're included here because their price tags aren't much higher than the other programs', and you can easily use the schedulers on their own. They also happen to be the best—*PC Tools Deluxe* wins the Best Buy, and *SideKick Plus* is close behind.

Not included here are scheduling-based personal information managers (PIMs) such as *Instant Recall*, *Current*, and *Portex*. These programs tightly integrate scheduling with features like contact data bases and text management tools. Though PIMs offer roughly equivalent scheduling tools, they're not reviewed here because they're more challenging to learn and offer features that many users won't require. Still, they provide a valid alternative if you're looking for a total desktop solution. Using the buying criteria laid out below, you can evaluate the scheduling features of PIMs on your own.

Three schedulers let you compose notes in built-in editors and attach them to appointments.

Time Is of the Essence

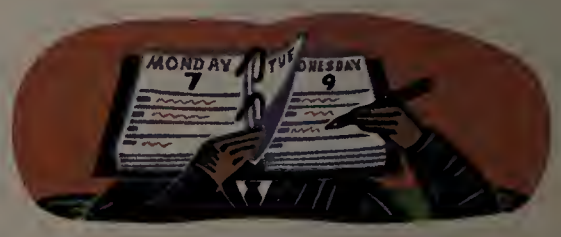
Most scheduling packages adopt the basic metaphor of a paper-based appointment book. The heart of any scheduling program is a daily planner where you enter appointments. In most of the programs you can also select days from a pop-up monthly calendar.

The most important buying issue is a program's scheduling capabilities—whether you can set recurring events or assign meeting durations, for example. Next in line is ease of use. A scheduler must be intuitive or people won't use it. You should be able to view calendars, record appointments, and so on without having to wade through a manual. Next in importance is the variety and flexibility of the views afforded by the program. Finally, you should consider its printing talents. Here's a closer look at the make-or-break features.

Scheduling All the programs let you schedule one-time events and recurring events, such as weekly or monthly meetings. Surprisingly, only two—*PC Tools* and *SideKick*—let you assign durations to events. With the other programs you can partially fake this feature by simply entering the end time in the descriptive event text, but because the durations aren't calculated or graphically displayed, it's difficult to gauge free time. All the programs let you postpone appointments by changing the date and time, and *Complete Calendar* prompts you for that information.

The ability to globally modify recurring appointments varies. All the programs let you delete, edit, or change the times of individual appointments, but when you're editing recurring appointments, only *SideKick* lets you change the time of just one, and only *PC Tools* and *SideKick* give you the option of deleting only one appointment or all related appointments. *Reminders* limits you to deleting or editing appointments individually, and though the other two programs let you edit or delete all recurring events, you can't edit or delete just one of the recurring events.

Three of the programs let you compose notes in built-in editors and attach them to appointments, which is helpful if you want to enter the details of time or place or an agenda. Another plus: Some



of the programs let you schedule conditional events, like setting a meeting that takes place the second Tuesday of every other month. Only *PC Tools* warns you if you set an appointment that conflicts with another. Also helpful is the ability to assign priorities to events or tasks; *PC Tools* even offers a to-do list that displays tasks for a given number of days in priority order.

If you're particularly busy, you'll probably want to be able to set alarms to remind you of events. *PC Tools* and *SideKick* offer the best alarm systems.

Both programs will beep at or before an appointment's scheduled time and will pop up an appointment description over your application. Both provide a snooze button that lets you ward off the alarm for awhile.

Several of the programs run on networks, but only *SideKick Plus* makes good use of networking. It's the only program reviewed that lets you set common appointments that can be viewed by all. This is a far cry from the group scheduling capabilities offered by groupware packages, but it's still a plus.

Ease of Use If the program isn't easy to use, you'll end up going back to a desktop calendar. After all, this isn't rocket science—you simply want to make your appointments and get on with your day.

When someone calls and you need to set an appointment, you want to be able to jump into your scheduler, easily view appointments and free times, enter or change an event, and return to the application where you left off. That's why it's essential that a scheduler be RAM resident, as *SideKick*, *PC Tools Deluxe*, and *Complete Calendar* are.

It's also nice to be able to jump directly to the scheduler's appointment book. If the program's interface doesn't naturally lead you there, you should at least be able to load the program with DOS-level commands that immediately take you to your favorite view, or to call on macros that can move you around quickly in the program.

A smooth method for entering appointments is paramount. *PC Tools* and *SideKick* let you plug appointments into a predefined time slot in a daily log, and the time intervals are customizable. You should also be able to enter the time manually with a minimum of keystrokes. For example, to set an appointment for 4:00 in the afternoon using *PC Tools* or *SideKick*, you simply type **4**; *Calendar Creator Plus* makes you enter **04:00pm**.

Views The variety and quality of the views are crucial. All the programs provide daily appointment logs and

FEATURES EVALUATION

Personal Schedulers: Adept Scheduling, Flexible Views

PC Tools Deluxe wins a Best Buy, with SideKick Plus a close second. Both offer sophisticated scheduling features like the ability to set durations and attach notes.

● Yes
○ No
◒ Deficient

Standard features	Calendar Creator Plus 3.0	Complete Calendar 2.5	PC Tools Deluxe 6.0	Reminders 2.1	SideKick Plus 1.0
Price	$59.95	$79.95	$149	$39.95	$199.95
Mouse support	○	○	●	○	○
Macros	○	●	●	○	●
Launches applications unattended	○	○	●	○	●
RAM-resident scheduling	○	●	●	○	●
RAM required to remain resident	n/a	97K	40K	35K [1]	75K
Scheduling					
Schedules recurring events	●	●	●	●	●
Conditional scheduling	●	●	●	◒ [2]	○
Adds notes to events	○	○	●	●	●
Defines durations	○	○	●	○	●
Allows conflicts	●	●	◒ [3]	●	●
Warns of conflicts	○	○	●	○	○
Edits appointment times	●	●	●	●	●
Sets priorities	●	●	●	○	○
To-do list	○	○	●	○	○
Alarm notification	○	●	●	◒ [4]	●
Combines calendars	●	○	●	○	○
Common appointments on networks	○	○	●	○	●
Views					
Daily view	●	●	●	●	●
Monthly view	◒ [5]	●	●	●	●
Displays grid calendar showing appointment descriptions	○	●	●	○	○
Weekly view with bar charts showing appointments	○	○	●	○	●
Searches by text for appointments	○	●	●	○	●
Searches for next free time slot	○	○	●	○	●
Printing					
Weekly view showing appointments	●	●	●	●	○
Weekly view showing time blocks	○	○	●	○	●
Monthly view showing appointments	●	●	◒ [6]	◒ [6]	○
Fonts and shading	●	○	●	○	○
Prints in popular organizer sizes	●	○	●	○	○
			BEST BUY		

[1] Only for alarm notification; no RAM-resident scheduling.
[2] Limited; can't handle "every other" conditions.
[3] Only if originally scheduled event starts after new event.
[4] Alarm settings disappear if you reboot PC.
[5] Read only; can't select day to open appointment book.
[6] Not in a wall-calendar format.

Software You Can Really Use #11

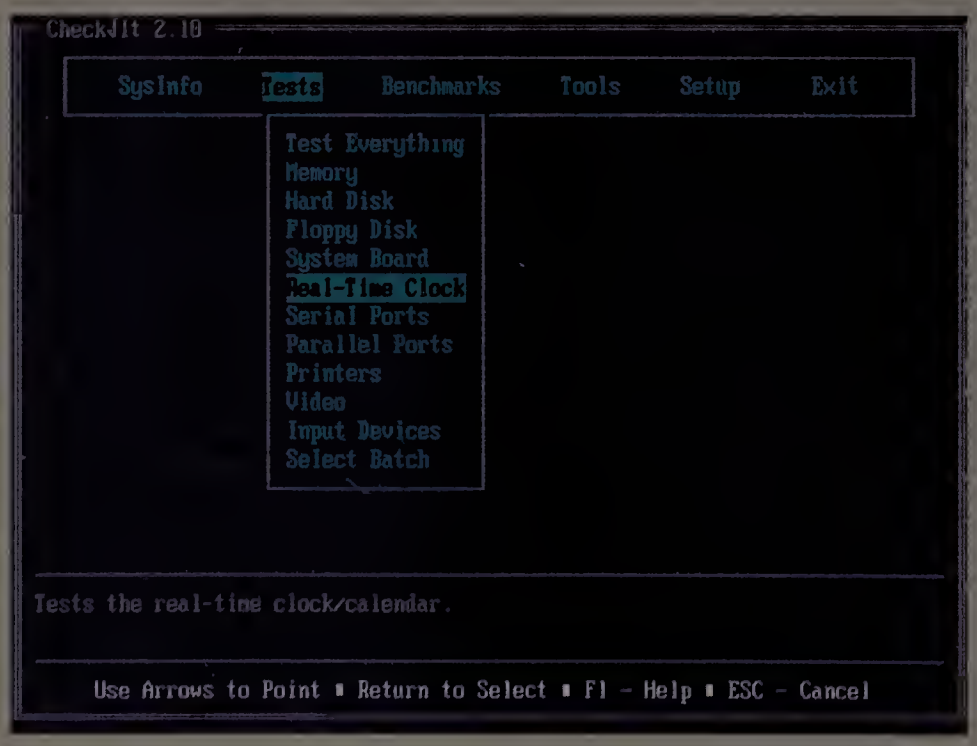
Noninvasive Testing: CheckIt 2.1

Diagnostics were once considered status symbols for power users. Now anyone who can copy a file understands the importance of having a program that looks inside the gray case every so often.

CheckIt does just that—pops open the hood of your computer without your having to turn a screw. Just scroll across the pulldown menus, and peek into every nook and cranny of your system. This isn't an antiviral program or a hard disk optimizer, but it will inspect everything from system configuration, interrupts, and device drivers to system memory and hard disks—even the mouse or joystick.

CheckIt lets you easily set up a burn-in procedure for a new computer. It runs multiple tests to check floppy disks, hard disks, system boards, and all types of memory, ports, and video output devices while logging pass/fails to either a disk file or a printer. You can run it monthly to make sure all your computer's components are up to snuff. List price: $149. TouchStone Software, 909 Electric Ave., Seal Beach, CA 90740; 800/531-0450, 213/598-7746. —*Steve Bass*

Reader service no. 622



CheckIt gives you in-depth, flexible diagnostic capabilities by providing a full suite of menu-controlled tests for everything under the hood of your PC.

monthly calendars, but only *Complete Calendar* provides a bird's-eye wall-calendar view that shows appointments for the coming three weeks.

PC Tools and *SideKick* provide time-block displays that are just as helpful. When you're trying to find a free time slot, you can display horizontal bars that show the appointments (and free time) for each day in the coming week.

Search features are also helpful. All the programs let you search by day of the week, and three let you search for appointments by the text in their descriptions. *PC Tools* and *SideKick* even let you search for the next free time slot by issuing the desired duration and ranges of dates and time.

Printing Except for *Calendar Creator Plus*, these programs have fairly limited print features. All of them let you print daily schedules, but only *Calendar Creator Plus* lets you merge different schedules or print them in a size that fits a DayTimer or Lefax organizer. If you want to print an annotated monthly calendar, only *Calendar Creator Plus* and *Complete Calendar* can do the job. And only *Calendar Creator Plus* provides font support, shading, boxes, and numerous canned report formats.

Here's how the contenders match up.

Calendar Creator Plus 3.0

Miles ahead of its rivals at print formatting, Power Up's *Calendar Creator Plus* is designed primarily for secretaries who need to keep and merge the schedules of managers and print them out in polished formats. The program is highly recommended if top-notch output is your goal, but its unfriendly interface and lack of features make it only a fair value as a personal scheduler.

Calendar Creator Plus takes some time to get into. Imagine that you're on the phone and need to check your schedule to set up an appointment. Because the program isn't RAM resident, you must quit your application and load it. Instead of escorting you directly into a calendar or daily view, the program forces you first to wade through a menu of maintenance options. And there are no macros or command-line options to customize this tedious process.

You finally arrive at an appointment book that lists a screenful of times and events covering one or more days. But the display lists events starting at the beginning of the year. This is fine if you want to know what was happening back in January, but it's not very convenient. You have to press <F4> and enter a date to view the day you need. By this

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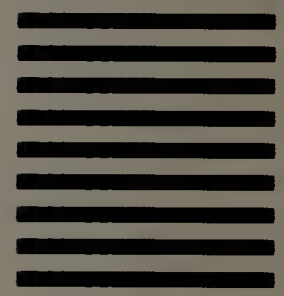

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time, the party on the other end of the line may well have hung up.

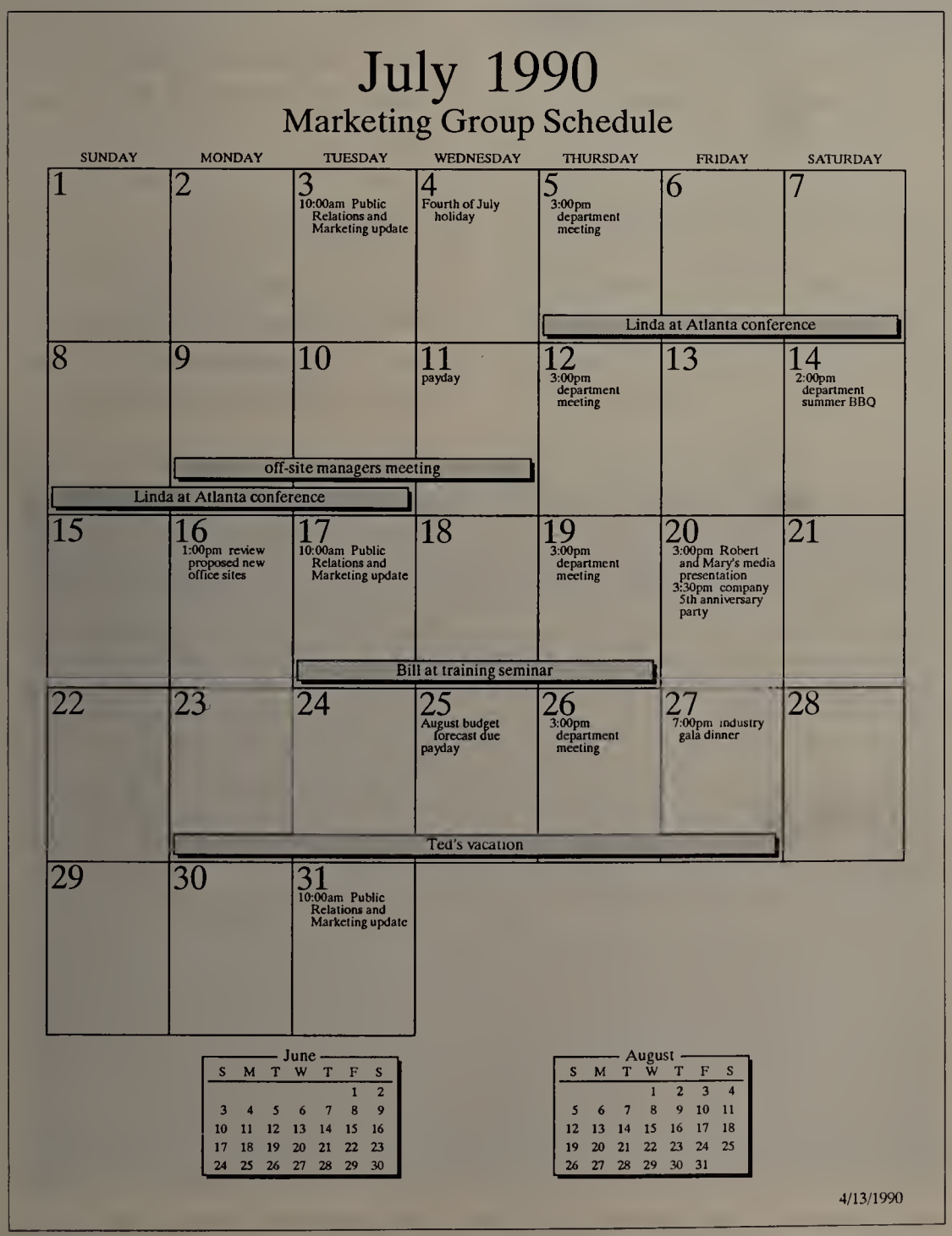
Adding an event is harder than with the other programs. Rather than move to a day and time and enter the details about the appointment, you must fill out a complex dialog box, entering the description, month, day, year, and time. You can cycle through a pick list for each entry, but it's almost faster to type. You can pop up a small monthly calendar for reference, but it's read-only—you can't select a date from it.

Data entry is convoluted. When entering a time, you must fill out all the zeros, and if you make a mistake, you're greeted with rude beeps and error messages. Options for setting recurring or conditional dates are extensive, but the process involves making your way through a complex menu system.

Calendar Creator Plus lacks key features such as the ability to attach notes or assign durations to events. You can assign priorities, but you can't set alarms, and on-screen views are limited to the appointment list and the static monthly calendar.

So far, so bad, but turn on your printer and *Calendar Creator Plus* shines.

Polished Printed Calendars



With Calendar Creator Plus, you can merge schedules and print out departmentwide calendars in a variety of polished formats. The latest program adds support for HP LaserJet soft fonts.

An easy-to-use print formatting screen lets you select from 11 customizable formats, including weekly, biweekly, monthly, and yearly views, complete with all or selected appointments. You can also choose page sizes that fit Day-Timer and Lefax organizers.

Better yet, the output is presentation quality. The biggest change: Version 3.0 provides superb font support, including 300-dpi soft fonts for the HP LaserJet. In addition, you can add titles, footnotes, boxes, and shade effects.

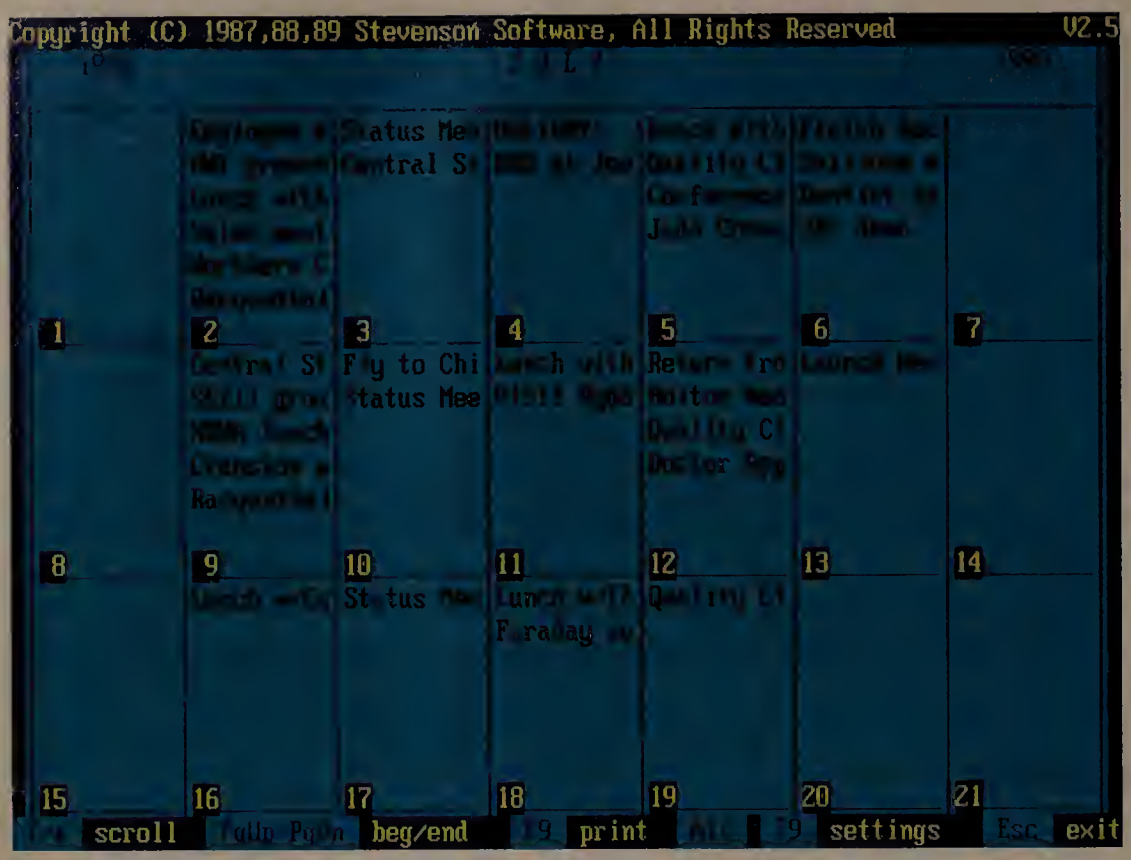
All the programs let you set up separate calendars, but only *Calendar Creator Plus* lets you merge them into one. For example, you could combine separate business and personal schedules, or collate and print out a combined schedule that covers every employee in the office.

Calendar Creator Plus needs to pick up a few tricks from *Top Priority*, Power Up's $99.95 to-do–list program. *Top Priority* is RAM resident and offers a more interactive interface, but it's even less applicable for appointment scheduling than *Calendar Creator Plus* is. If you need to combine schedules or generate flashy printed calendars, you may be willing to put up with *Calendar Creator Plus*'s awkward interface. Otherwise, look elsewhere.

Complete Calendar 2.5

Stevenson Software's *Complete Calendar* is fairly easy to use and provides most of the scheduling features you'll need. You can buy either the $39.95 stand-alone version or the $79.95, 97K RAM-resident version reviewed here, which includes alarms. *Complete Calendar* is a good value, but its inability to assign durations or attach notes keeps it from the top spot.

Accessibility is *Complete Calendar*'s forte. Merely press <Alt>-<Esc>, and up pops a traditional, full-screen monthly calendar. Cursor to the day you want, press <Enter>, and that day's schedule is displayed. You can record macros and even run them from the



Complete Calendar can display a three-week bird's-eye view, complete with descriptions. It truncates each entry to ten characters, but that's usually enough to recognize an appointment.

DOS prompt to automatically display the views you want.

To enter an appointment, you type an event's description on any blank line in the schedule and press <F2> to enter a time. You have to type in all the zeros—it won't guess for you.

If you want, you can apply a template of default times listed by any interval you choose. This way you can enter an appointment at an existing, displayed time the way you can in *PC Tools*. Unfortunately, this feature works only for scheduling one day at a time, and if you add a new list of times with different intervals, it won't clear the previous template.

You can also assign priorities instead of times to entries, which allows you to integrate action items with your daily schedule. It's not a true to-do list—items display only on the day they're scheduled—but you can cut and paste tasks (or appointments) to simulate a to-do list. Setting alarms is straightforward, but the alarm only beeps—it won't display a screen message. Also, you can't set the alarm to ring before an appointment, and there's no snooze button.

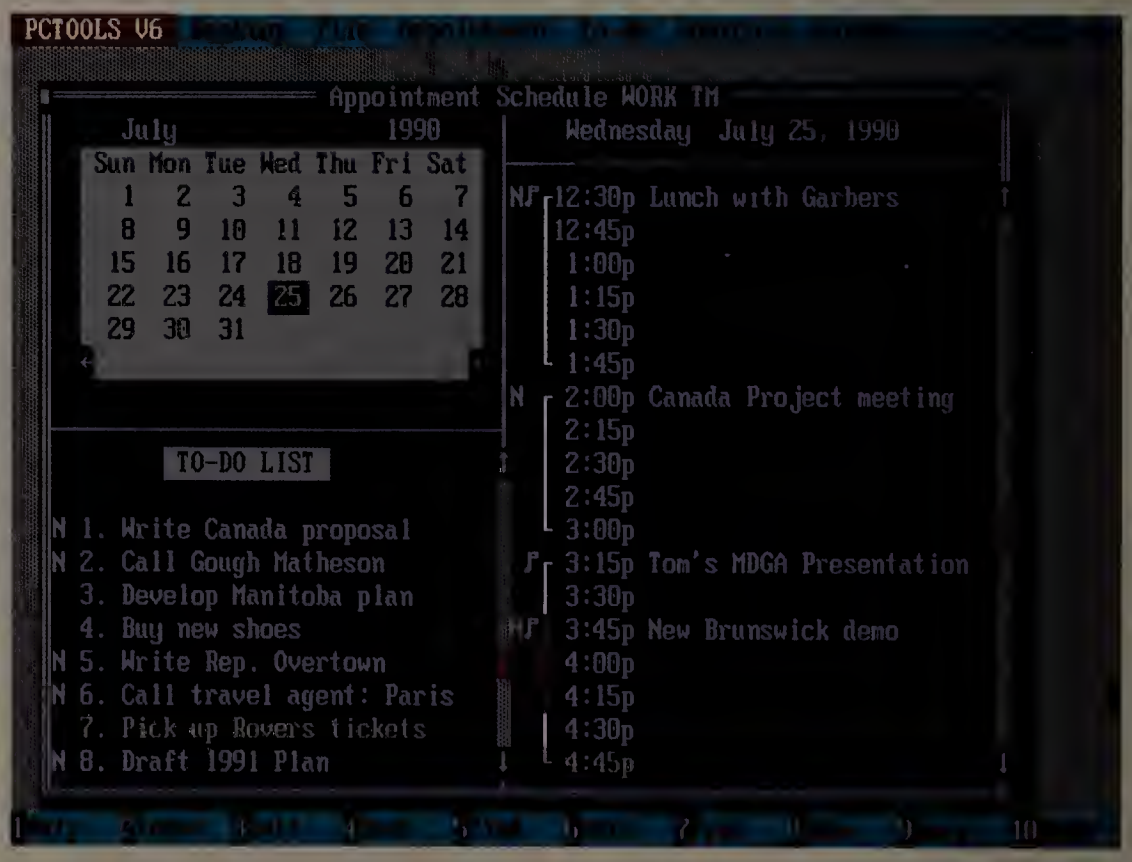
Recurring and conditional scheduling is easier than with the other programs reviewed. Working with on-screen diagrams, you use the cursor keys to connect a conditional such as *every other* with an interval such as *week*. You can even parse commands as tortuous as "the second Thursday on or before the fifth day of July."

Although it lacks the crucial ability to set or view durations, *Complete Calendar* almost makes up for it by letting you display three weeks at a time in a calendar format, complete with the first six appointments in each day. The display truncates each entry after the first 10 characters, but that's usually enough for you to recognize an appointment and get a good overview of what lies ahead. Print features don't come close to *Calendar Creator Plus*'s, but you can output a daily log, and, unlike with most of the programs, you can print an annotated monthly calendar.

Complete Calendar is a solid value. With the addition of duration setting and note attachments, it could be a winner.

PC Tools Deluxe 6.0

Version 6.0 of Central Point's *PC Tools Deluxe* greatly improves the scheduling talents of this popular desktop organizer. The Appointment Scheduler is



One of the reasons PC Tools Deluxe wins a Best Buy is that it conveniently displays monthly, daily, and to-do list views all at once. Another plus is its conflict warning feature. The red shading in the daily appointment book indicates a scheduling conflict.

but one menu selection attached to a larger module called the Desktop, which in turn is one of many modules that make up *PC Tools Deluxe*. Yet the program is more powerful and easier to use than others devoted exclusively to scheduling, and at $149 it's quite affordable. Offering extras such as a to-do list and a conflict-warning feature—both unique to this roundup—*PC Tools Deluxe* edges out *SideKick Plus* to win the Best Buy.

If you load just the Desktop portion of *PC Tools* without loading its other modules, the TSR consumes 40K of RAM (compared to 75K for *SideKick*). The scheduler is only a hot key away, and you can configure the program to avoid the introductory menus and immediately display a daily schedule, a monthly calendar, and a to-do list. All of these views share the screen at once, making it easy to see all the elements involved in setting an appointment. Regrettably, this multiview display also limits event descriptions to a paltry 25 characters, but you can attach notes with a handy pop-up editor.

The interface is smooth. You can use function keys or choose items from pull-down menus. *PC Tools Deluxe* is the only program reviewed that lets you use a mouse, so you can click on dates and times and scroll lists.

To make an appointment, you press <Enter> or click on a day in the monthly calendar, and the appropriate daily schedule is displayed. Select a time on the schedule, and a slick dialog box opens up with the date and time already filled in. Here you can enter a short description and assign a searchable classification code that will display on the daily schedule. For example, you could assign *B* for business and *P* for personal.

You can also set up recurring appointments, but not conditional events such as "the first Monday of every other month." Also, unless you're setting up a monthly appointment, it won't accept day names such as "next Tuesday."

More crucial, however, is *PC Tools'* ability to set the duration of an event, a feature most of its rivals lack. You can set the duration by time, for example, entering the number of hours or minutes the meeting will take; you can't, however, enter the ending time, as you can in *SideKick*.

PC Tools Deluxe is the only package that warns you if an event conflicts with another. If a newly added meeting pre-

EXECUTIVE SUMMARY

Desktop Organizers Deliver Top-Notch Scheduling

Best Buy PC Tools Deluxe and runner-up SideKick Plus outperform simple schedulers.

Personal scheduling software provides instant access to electronic daily appointment books and displays numerous views of a schedule. This flexibility, plus extras such as alarms and to-do lists, makes PC schedulers more powerful than the paper variety they imitate.

BEST BUY

PC Tools Deluxe beats out **SideKick Plus** as the Best Buy among personal schedulers. Both let you attach notes to appointments and schedule the duration of events, but **PC Tools Deluxe** has the edge with its priority levels, mouse support, to-do lists, and conflict warnings.

	Calendar Creator Plus 3.0	Complete Calendar 2.5	PC Tools Deluxe 6.0	Reminders 2.1	SideKick Plus 1.0
Scheduling	Fair	Good	Excellent	Fair	Good
Views	Poor	Good	Excellent	Poor	Excellent
Printing	Excellent	Good	Good	Fair	Fair
Ease of use	Poor	Good	Excellent	Fair	Excellent
Overall value	Fair	Good	Excellent	Fair	Excellent
			BEST BUY		
Reader service no.	610	611	612	613	614

How we rate personal schedulers
We rate personal schedulers based on the information in the Features Evaluation table combined with our opinions of quality, reliability, ease of use, and user benefit. Scheduling features are most important, followed by the variety of views and printing features.

Scheduling is the prime buying criterion. To merit an Excellent rating, a program must be able to assign event durations and attach notes. Secondary features include the abilities to schedule conditional events, assign priorities, set alarms, and warn against conflicts.

Views measures the variety and quality of views, including search options. To win an Excellent rating, a program must provide a daily view, a monthly view, and a weekly bar chart view of appointments and free time. Also helpful is a weekly calendar view that displays abbreviated entries. The program should also be able to search for a block of free time by duration and time range, and search appointments by description text.

Printing evaluates output features. To earn an Excellent rating, a program needs to offer numerous print views and formats (including sizes that fit popular notebook organizers) and support laser printer fonts and shadings.

Ease of use evaluates a program's basic interface and the accessibility of its daily appointment log. To win an Excellent rating, a program must be RAM resident, and it must offer macros, custom display options, and logical menus and commands. Scheduling recurring and conditional events should be easy.

Overall value averages all the above criteria, plus price and technical support.

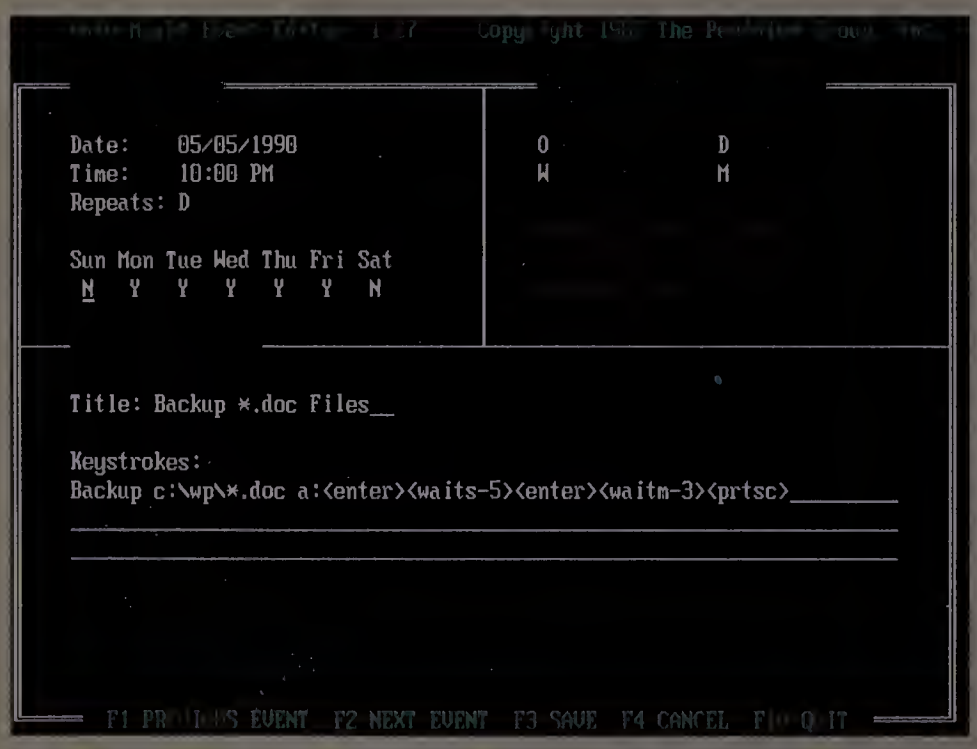
Software You Can Really Use #12

Minding the Store: Auto-Might

It's 3 a.m. Nothing's moving in the place except your AT—and *Auto-Might*. This pleasant little utility lets you schedule one-time or recurring events, like running the long, nasty numbers that you hate to deal with during the workday. It's sort of a TSR macro program with plenty of added features, each intended to make sure the job gets done without your lifting a finger.

The program lets you schedule eight time slots, which can include up to 210 keystrokes each. The macros can execute batch files, DOS commands, or (with some work) menu-driven and command-line software. *Auto-Might* pops a warning window on screen when it's ready to work, letting you cancel, postpone, or activate the event. Likely applications include performing backups at predetermined intervals, reindexing large data base files, optimizing your hard disk, and handling communications jobs when the phone rates are lower. List price: $99. The Pendulum Group, 333 W. Hampden Ave. #1015, Englewood, CO 80110; 303/781-0575. —*Steve Bass*

Reader service no. 625



Auto-Might lets you write macros to handle events at the office when you aren't around—for instance, running late-night disk backups or communications jobs.

cedes an appointment set up previously, the program permits the conflict, but it's tough to set up an appointment to begin in a time slot already occupied by another meeting—to do so, you must first delete the original meeting and start over in the right order.

The alarm feature is top-notch. You can set alarms that beep and display the appointment on or before the event. *PC Tools* also exploits its scheduler as a timer. You can schedule the program to start a macro, open a notepad file, launch another *PC Tools* utility (such as tape backup), or even load an external application.

In the daily schedule, brackets surround the duration of each event, color coding indicates conflicts, and icons show whether an alarm or note is attached. You can also attach notes to items on a simple but effective daily to-do list. Assign priorities and start and end dates, and the action items are displayed in order of priority for the duration of the assigned time period.

Search features are extensive. You can search appointments by combinations of text, type, date, and time, and you can search for a free time by entering start and end dates and the amount of time needed. You can also search for the next scheduled appointment, but only on the current day.

One plus: You get a weekly time-block display of event durations, making it easy to find free time. It lacks the customization options of *SideKick*'s weekly time-block display, but it provides the essentials. You can print this graph out, along with daily logs and weekly schedules that list appointments or to-do lists for each day. Print options are better than *SideKick*'s, but *PC Tools* lacks *Calendar Creator Plus*'s fancy print formatting.

The choice is clear. If you can live without complex conditional scheduling, *PC Tools Deluxe* is the Best Buy.

Reminders 2.1

Designed as a central, on-line repository of notes, to-do list items, and appointments, Pop Software's *Reminders* fails at all three tasks. The interface is fairly easy to master, but the features are slim. To make matters worse, *Reminders*' raison d'être—its library of wacky pop-up alarms—is crippled by the fact that the alarms disappear if you reboot your PC. Despite its $39.95 price, *Reminders* is only a fair value.

One big problem with *Reminders* is that it doesn't pop up—only the alarm

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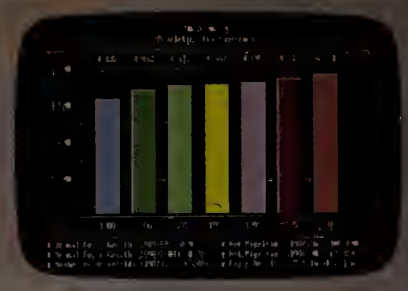

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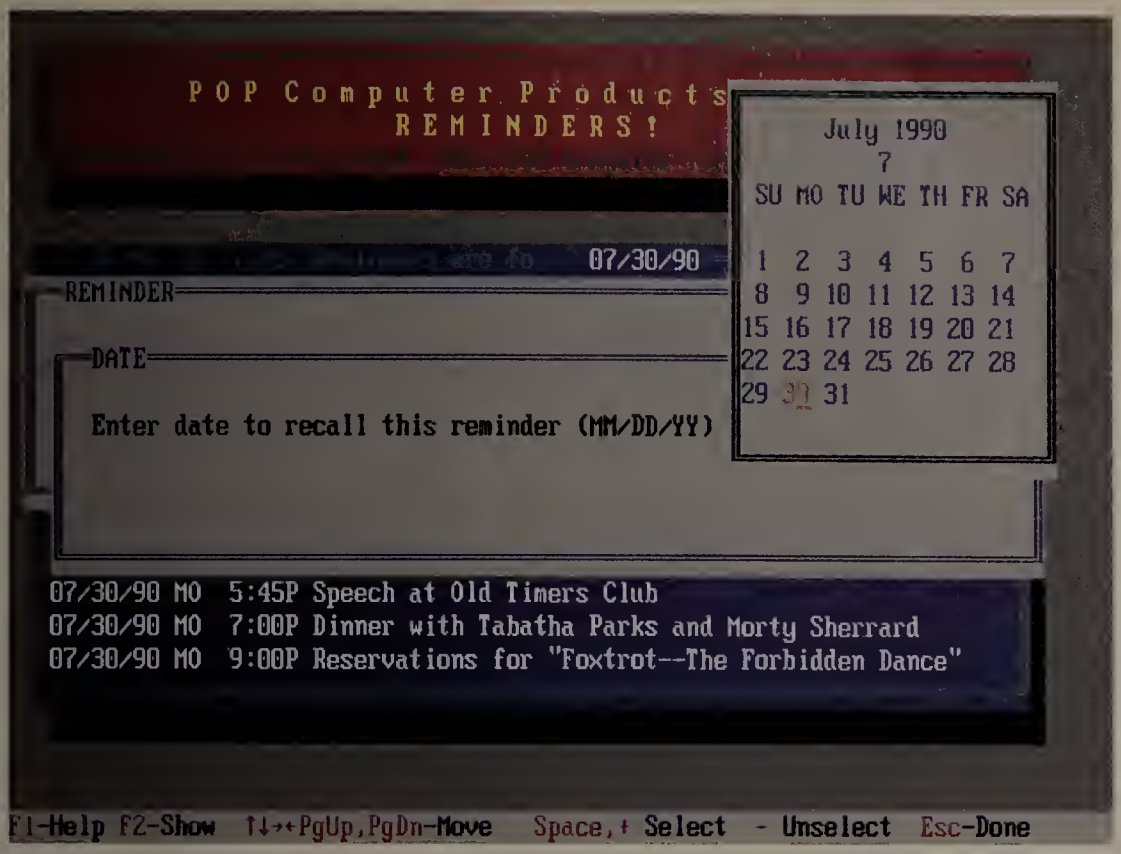

To assign a date with Reminders, you can select it from a pop-up calendar. If you wanted to enter a recurring or conditional event instead, you'd have to enter wild-card syntax.

system is RAM resident. Getting to your schedule takes time. When you load *Reminders,* it displays a list of appointments starting at the beginning of the year. To examine today's events, you must pop up a menu of views, scroll down the list to Today, and press **<Enter>**.

The procedure for entering an appointment is backward. You press a function key, enter the descriptive text, and *then* enter a date. You can also select a date from a pop-up monthly calendar, or you can enter a day name, such as Tuesday, or enter codes such as **EOW-2** (two days before the end of the week). You also use codes to set conditional appointments, entering ***/1/90** to schedule the first day of every month in 1990, for example. Since you can use only one wild-card asterisk per command, however, the possibilities are limited, and the manual does a poor job of explaining the syntax.

Data entry is fairly simple—to enter a 4 p.m. appointment, you simply type **4p**. Unfortunately, you can't enter an appointment directly into an existing time slot or select a time from a list.

Beyond simple scheduling, *Reminders* has little to offer. You can compose and attach a note to an appointment, but the editor lacks word wrap. Numerous novelty alarms are available, but there's no advance notice or snooze button, and the alarms disappear when you reboot. You can't specify an event's duration, much less assign it a priority.

Reminders' views are limited. There's no annotated monthly view, and though you can select from a menu of options such as "Next Week" or "Thursday," you can't search for an appointment by its descriptive text or search for the next appointment or free time slot. You can print weekly and monthly calendars, but only in a list format, and there are no formatting options.

If it were RAM resident, *Reminders* might rate well as a simple, low-cost scheduler. But as is, it's out of its league.

SideKick Plus 1.0

One of the first PC schedulers, Borland's *SideKick Plus* is still one of the best. Like *PC Tools Deluxe, SideKick Plus* is a desktop organizer equipped with various pop-up modules. Its Time Planner shares the limelight with nine text editors, nine outliners, four calculators, a card-file data base, a communications program, and a file manager. *SideKick Plus* is an excellent value, even if you use only the Time Planner, but it just misses winning a Best Buy because it lacks such *PC Tools* extras as a to-do list, priorities, mouse support, and conflict warning.

In the 75K RAM-resident mode, pressing <Ctrl>-<Alt> and then <Alt>-T brings you directly to a monthly calendar display. The program is fairly easy to navigate with cursor and function keys, but it has a layered structure in which you can escape back to the previously viewed screen. As a result, you're never sure what will happen when you press <Esc>—whether you'll move to the screen you want or end up at the DOS prompt.

Fortunately, the program is highly customizable. You can draw on programwide macros, set command-line options to establish particular opening displays, and launch external programs or other *SideKick* modules (such as tape backup) at predetermined times.

To enter an appointment, you simply select a day from the calendar, and the daily schedule pops up over it. You cursor down to a time, enter a description, attach notes to entries using a handy pop-up editor, and set alarms.

To assign a duration to an event, you supply the ending time in the event's description, and a bracket displays the length in the margin—not an elegant solution, but a workable one. *SideKick*'s data entry system is intelligent—if you type **9**, the program will assume you mean 9 a.m. and add the zeros automatically. *SideKick* won't warn of conflicts, but the overlapping brackets make them easy to spot.

SideKick delivers the best global features when deleting or editing recurring events—it always asks you whether the change should affect all the associated repeat events or just one. You can also schedule by day of the week—the first Tuesday of the month, say—but, as with *PC Tools,* more complex condition-

In addition to traditional monthly and daily views, SideKick Plus displays one to four weekly views showing appointment durations in a horizontal bar chart format. This makes it easy to quickly find a block of free time to schedule an appointment.

al appointments are beyond it. One unique feature is network support: You can set common appointments that are visible to each user, a helpful shortcut for scheduling meetings.

Finding free time is easy: You can search by duration and time range and, as with *PC Tools*, display a weekly view that shows the appointment durations blocked out in bar charts for each day. *SideKick* even lets you cursor to a day, press <Enter>, and pop into the daily log at the appropriate day—features *PC Tools* lacks. You can expand the number of hours displayed in each day and display up to four weeks at once. These weekly views are also printable, but you can't print an annotated weekly or monthly view, and formatting options are absent.

SideKick Plus is a dynamo at scheduling. With some extra touches such as to-do lists and conflict warning, it could rival *PC Tools Deluxe.*

Time Out

PC Tools Deluxe beats out *SideKick Plus* for the Best Buy, but they rate so closely that your decision may well hinge on the quality of the packages' other modules. *Calendar Creator Plus* is your only choice if you want classy printed calendars, but it doesn't hold up as an interactive scheduler, and *Complete Calendar* is a possibility if you don't need a desktop organizer.

Despite their clear superiority in this roundup, *PC Tools Deluxe* and *SideKick Plus* could be better. In particular, both could use more attractive print formats and some annotated weekly views. Still, they supply almost every scheduling feature you'll need without confronting you with the complexity of a PIM. ●

Eric Brown is a senior associate editor for PC World.

For more information about all products in this article, circle reader service no. 902.

WHERE TO BUY

Calendar Creator Plus 3.0
Power Up Software
2929 Campus Dr.
San Mateo, CA 94403
800/851-2917,
800/223-1479
California
LIST PRICE: $59.95
REQUIREMENTS: 320K; DOS 2.0 or later version
TECHNICAL SUPPORT: unlimited, toll-free number, M–F 8–5
OTHER SUPPORT: none
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Complete Calendar 2.5
Stevenson Software
P.O. Box 5016
Berkeley, CA 94705
800/869-7676,
415/843-4421
LIST PRICE: $79.95 ($39.95 without RAM-resident or alarm options), evaluation copy $5
REQUIREMENTS: 192K, DOS 2.0 or later version
TECHNICAL SUPPORT: unlimited, toll number, M–F 9–5
OTHER SUPPORT: none
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PC Tools Deluxe 6.0
Central Point Software
15220 N.W.
Greenbrier Pkwy.
#200
Beaverton, OR 97006
503/690-8090
LIST PRICE: $149 ($30 upgrade from previous versions)
REQUIREMENTS: 512K, DOS 3.0 or later version
TECHNICAL SUPPORT: unlimited, toll number, M–F 8–5
OTHER SUPPORT: BBS
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Reminders 2.1
Pop Computer Products
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800/950-4767,
303/674-0200
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REQUIREMENTS: 256K, DOS 2.0 or later version
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SideKick Plus 1.0
Borland Int'l
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P.O. Box 660001
Scotts Valley, CA 95066-0001
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408/438-8400
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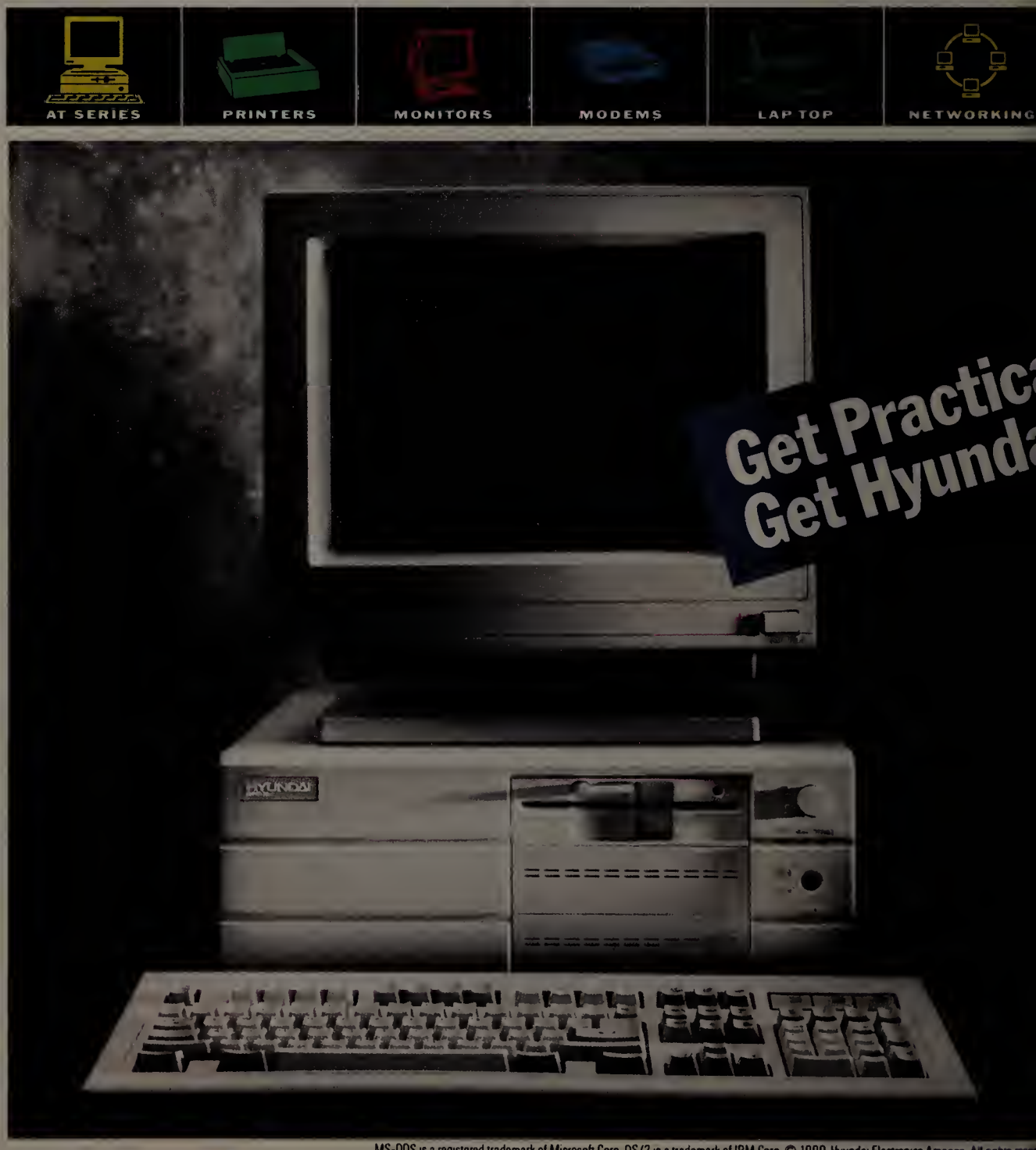

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100% HP Compatible with LJ II, IID, IIP, III	Requires an additional cartridge	Yes
Actual Number of Type Choices	69	77
Symbol Sets	20	22
Bar Codes & Zip Codes	No	Yes
Zapf Dingbats	No	Yes
Maximum Point Size	18 points	Unlimited with modules
Spreadsheet Sizes	3.6 points	3.6, 4.8 points
Headline Sizes (24 points and up)	Requires an additional cartridge	Unlimited with modules
Accepts Additional Fonts	No	Unlimited with modules
Custom Symbols/Graphics	No	Unlimited with modules
Drivers for Most Programs	Yes	Yes
Cartridge Price	$399.00	$399.00
Module Price	NA	$99.00 - $149.00
Expansion Potential	None	Unlimited

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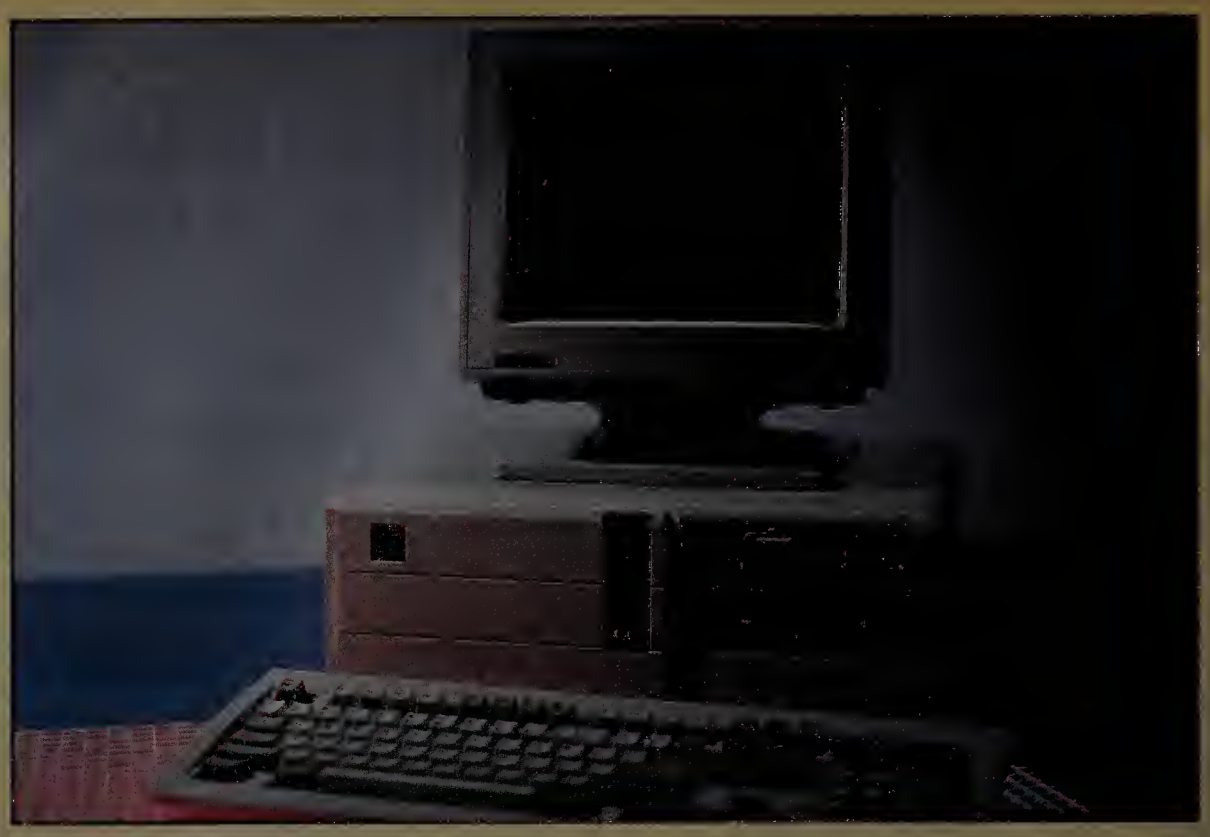

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PC WORLD'S RESIDENT EXPERTS PICK THE BEST ADD-INS, ADD-ONS, AND ACCESSORIES FOR FIVE TOP APPLICATIONS.

WHEN YOU WANT an authoritative opinion, turn to the nearest authority. So we did. In this fivefold guide to outstanding word processing, spreadsheet, data management, desktop publishing, and communications utilities, we looked no further than our own celebrated How To columnists. The result is an unabashed combination of personal prejudice, reluctantly revealed secrets, and thoughtful advice about which utilities to buy, and for what purpose.

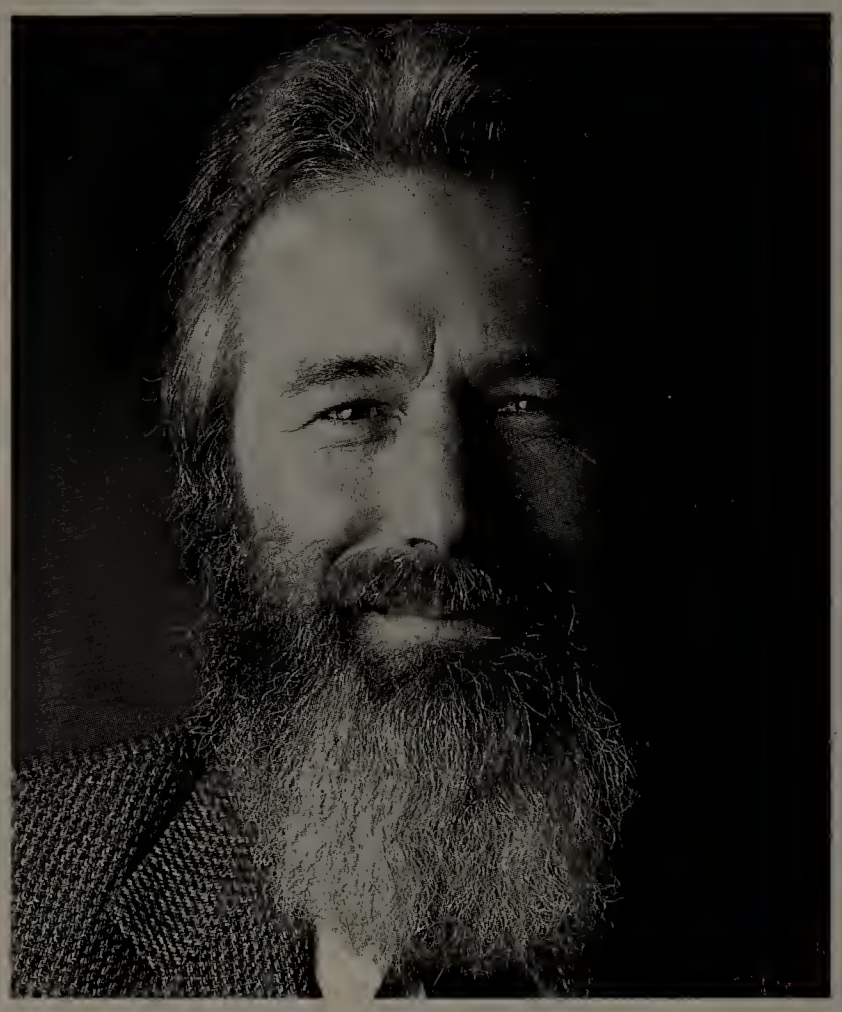
You'll find that our word processing columnist, George Campbell, and our communications expert, Judy Getts, share a weakness for shareware—products that spell relief for your pocketbook. The shareware they recommend compares favorably with commercial utilities, sometimes offering features that off-the-shelf programs can't match.

Our spreadsheet connoisseur, Richard Scoville, serves up an appetizing array of accessories, ranging from a potent budgeting add-in to a simple printing utility. Alan Schwartz, our data management expert, favors utilities powerful enough to help build full-fledged *dBASE* applications. Finally, while the bulk of Richard Jantz's desktop publishing utilities are ideal for keeping *Ventura* or *PageMaker* humming, some can inject life into any application where presentation counts.

SOUPED-UP WORD PROCESSING

OUTLINERS, GRAMMAR CHECKERS, PRINT ENHANCERS, AND FONT AND MACRO LIBRARIES LET YOU TURN OUT SHARPER-LOOKING DOCUMENTS THAT HAVE SOMETHING TO SAY.

GEORGE CAMPBELL



I'm still looking for the perfect word processor. Powerhouses like *Word* and *WordPerfect* come close, but each lacks something—especially when it comes to output. Fortunately, I've discovered a number of utilities that deliver attractive, easy-to-add fonts and graphics. I've also found a good outliner and grammar checker to help ensure my work is well written, not just good-looking.

Some utilities have dropped from my list. I once used interpreters such as *Freedom of Press* to add scalable PostScript fonts to my documents, despite hefty memory and disk requirements. But the PacificPage PostScript font cartridge for the LaserJet convinced me to delete those programs from my hard disk (see "PostScript the Hard Way," May 1990, for a review).

Note that four of the ten programs I've listed are freeware or shareware—but that doesn't mean I'm a cheapskate. I'm continually amazed by the unparalleled features shareware authors pack into their creations; the top-flight font editor *Qfont* is a case in point. Note that I've added the complete file names for these programs in parentheses to help you recognize them on line.

JEFF MAY

GrandView 1.01a

While *Word* and *Word for Windows* have superb outlining tools, many other programs fall short in this area. Symantec's *GrandView* is pricey, but its mouse support, automatic numbering, and macros make it a very powerful outliner. It can collapse and expand headings, zoom to a portion of an outline, and use a dozen numbering methods. With nine windows, it's easy to organize even the largest document. Symantec Corp., 10201 Torre Ave., Cupertino, CA 95014; 800/441-7234, 800/626-8847 California, 408/253-9600, 408/252-4694 (fax). List price: $295.

Reader service no. 630

Grammatik IV

Even professional writers make mistakes. Grammar checkers aren't infallible either (in fact, they can be downright misleading), but of those I've tried, *Grammatik IV* does the best job. It checks the syntax, grammar, punctuation, and style of documents from 33 word processors. In RAM-resident mode, you can check a document and plug in proposed corrections without leaving the word processor. The program makes suggestions based on one of six writing styles, and you can even customize the rules to suit your personal style. Reference Software, Inc., 330 Townsend St. #123, San Francisco, CA 94107; 800/872-9933, 415/541-0222, 415/541-0509 (fax). List price: $99.

Reader service no. 631

Word for Word Professional 4.1

Until everyone uses the same word processor, sharing files with others will remain a problem. *Word for Word Professional* easily converts files to and from over 20 popular formats, including those of *WordPerfect, XyWrite,* and even *Lotus Manuscript.* You can convert a single file or up to 200 at once. If *Word for Word Professional* can't translate a control character, the utility inserts a notation to that effect in the document. Mastersoft, Inc., 6991 E. Camelback Rd. #A320, Scottsdale, AZ 85251; 800/624-6107, 602/277-0900, 602/970-0706 (fax). List price: $149.

Reader service no. 632

Express Art/300 Libraries

Thanks to the new graphics

capabilities of high-end word processors, you can now use clip art to perk up otherwise boring documents. All the images in the *Express Art* clip-art libraries are TIFF files, which you can import into most graphically equipped word processors, including *Word* and *WordPerfect.* You have a choice of two business collections along with educational and special occasion sets; each includes over 100 scalable, high-quality line drawings. Power Up Software Corp., P.O. Box 7600, San Mateo, CA 94403; 800/223-1479, 415/345-5575 (fax). List price: $59.95 per library.

Reader service no. 633

Glyphix 3.1

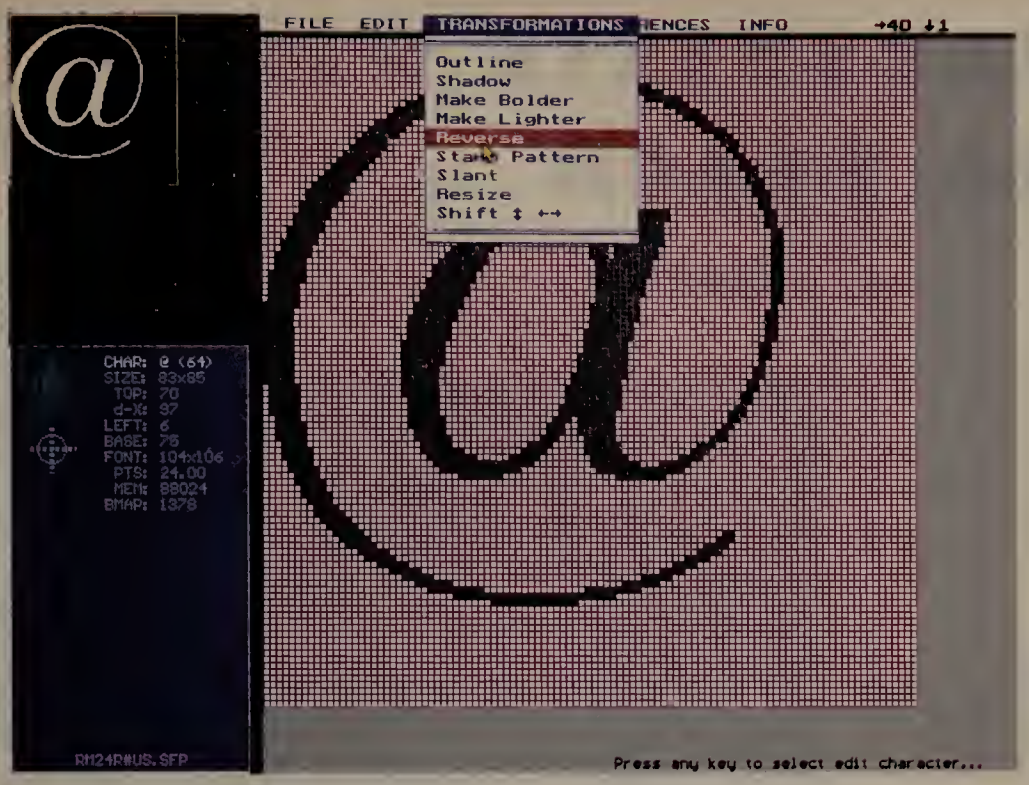
Unlike most font packages, which soon riddle your hard disk with files, *Glyphix* creates bit-mapped fonts from outlines and sends them to your LaserJet-compatible printer posthaste. The typefaces that come with the package can be scaled from 3 to 120 points, and *Word* and *WordPerfect* can adopt them as easily accessible menu options. *Glyphix* also generates outline, shadow, shaded, and reversed fonts for each typeface. The basic package includes an installation kit, four outline typefaces, and a symbol outline. Additional font outlines cost from $24.95 to $49.95. SWFTE, 128D Senatorial Dr., Greenville, DE 19807; 800/237-9383, 302/429-0532 (fax). List price: $99.95.

Reader service no. 634

The Image Printing Utilities 3.29

If you use a nine-pin printer, there's no need to suffer from laser envy. Offering 25 fonts, *The Image Printing Utilities* can automatically print your document at over 200 dots per inch. It recognizes your program's boldface, italic, and underline commands; to change fonts, just include a backslash code. The program can be used as a RAM-resident utility or executed from the command line. It includes double- and triple-sized fonts and line-drawing characters for rounded boxes. Image Computer Systems, 124 Wellington Heights Rd., Avon, CT 06001; 203/678-8771, 203/676-9544 (fax). List price: $52.95.

Reader service no. 635



Qfont isn't just another font editor. You can size or slant any HP-compatible font and even turn bit-mapped fonts into outlines.

WPDraw (WPDRAW.ZIP)

WordPerfect 5.0 and *5.1* users should grab this free program. It lets you display the word processing program's WPG graphics files one at a time or in automatic sequence, using so little memory you can run it with the <Ctrl>-<F1> shell command. Written by Kenneth MacLeod, it's available only if you have a modem. You will find *WPDraw* on CompuServe (GO WPSG) in the Graphics/Tables/DTP library. List price: free.

Reader service no. 636

Qfont 1.5 (QFONT15.ZIP)

If you use a LaserJet-compatible printer, this $80 shareware utility is a must. A mouse-driven font editor that lets you enlarge, shrink, or slant any HP-compatible soft font, *Qfont* can also turn bit-mapped fonts into outlines. You can make fonts bolder or lighter, or fill a character with a pattern. Using the built-in paint program, you can even create an entirely new font or design a logo (a set of master fonts helps get you started). An evaluation copy is available for $10, or you can download a shareware version from the Jamestown Software bulletin board service (BBS). Jamestown Software, 2508 Valley Forge Dr., Madison, WI 53719; 608/271-2090, 608/271-3685 (BBS). Registration fee: $80.

Reader service no. 637

RB Macros (RBMACRO.ZIP)

This macro collection for *Word 4.0* and *5.0* includes over 50 macros already in glossary files. You'll find tools for window management, margin setting, printing, word and character inversions, and more. You can get a copy on CompuServe (GO MSAPP) in the "Word for the PC" library or from the author for $10. RB Software, 1109 Arnette Ave., Durham, NC 27707. Registration fee: $10.

Reader service no. 638

WP Macros (WPMACxx.ARC)

Compatible with *WordPerfect 4.2* to *5.1,* this collection of over 100 macros can handle anything from envelope printing and file conversion to block moves and page numbering. You'll find the macros on CompuServe (GO WPSG) in the software library. (The *xx* in WPMAC*xx*.ARC stands for your *WordPerfect* version.) A check for $10, sent to the author, will also net a copy. Alan M. Kaplan, 101 N. McDowell St. #118, Charlotte, NC 28204. Registration fee: $10.

Reader service no. 639

George Campbell is a contributing editor for PC World.

For more information about all products in this section, circle reader service no. 903.

SPREADSHEETS WITH EXTRA REACH

1-2-3 UTILITIES CAN DELIVER RELEASE 3'S ABILITIES WITHOUT DEMANDING HIGH-POWERED HARDWARE. SOME OFFER FEATURES EVEN LOTUS HASN'T THOUGHT OF YET.

RICHARD SCOVILLE

CHRIS SEWARD

Okay, let's have a show of hands. How many of you are still using *1-2-3* release 2.01? The nifty *2.2* upgrade? The monumental, hardware-hungry release 3?

Chances are, the higher the version, the fewer hands go up. That's because whatever version of *1-2-3* you're accustomed to probably does what you need it to do 95 percent of the time. Like most of you, I'm happy with familiar menu options, @ functions, and macros. But every now and then I want a better way to grapple with tricky problems.

That's when I reach for a spreadsheet utility. They come in two basic varieties: stand-alone accessories that load worksheet files, and add-in modules that you call up from within *1-2-3*. All of the favorites listed here work with *1-2-3 2.01* and *2.2* (none are compatible with release 3).

@BASE 1.22

With this *1-2-3* add-in you don't need release 3 to view and query DBF files. *@BASE* pulls *dBASE* records into *1-2-3*, where you can edit, delete, and browse through them; you can add records and even create calculated output fields and cross-tabs. A set of special @ functions provides warm links to *dBASE* files, ensuring the data you work with is current. The extra-cost *Option Pac* provides full-featured indexing and relational joins—capabilities release 3 can't match. *@BASE* takes 66K of RAM (73K if you use the @ functions), while *Option Pac* needs 44K. Personics Corp., 63 Great Rd., Maynard, MA 01754; 800/445-3311, 508/897-1575, 508/897-1947 (fax). List price: $195, *Option Pac* $89.95.

Reader service no. 640

R&R Worksheet Report Writer 1.0

A valuable tool for *1-2-3* users with large data bases, this accessory provides a relational, band-type report generator for *1-2-3* data ranges. Its well-designed editing screen lets you arrange fields freely. You can create calculated fields, select records and group them, and print summary statistics. You can even join two tables on a common field to yield simple relational reports. Concentric Data Systems, 110 Turnpike Rd., Westborough, MA 01581; 800/325-9035, 508/366-1122, 508/366-2954 (fax). List price: $149.

Reader service no. 641

Look&Link 1.1

1-2-3 release 2.2 offers roughly the same sheet-linking features as *Look&Link*, but you don't get the ability to see the other worksheet. The Look portion of this *1-2-3* add-in pops up a small window showing the target worksheet; once you've found the values you need, you can easily build linked formulas. The Look module needs 53K of RAM; Link occupies 25K. Personics Corp., 63 Great Rd., Maynard, MA 01754; 800/445-3311, 508/897-1575, 508/897-1947 (fax). List price: $99.95.

Reader service no. 642

Noteworthy 1.01

Think of this simple, indispensable add-in as a pad of Post-it notes for spreadsheet cells. Press the hot key, and a little text window pops up of-

fering a serviceable set of editing and search features. You can exchange text between worksheet and notes, move a note to another cell, and view or print any note (or all notes complete with cell addresses). A toggle highlights the cells with notes attached. The

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Disk Backup

NEW ***Supports tape drives*** *used by IBM, Compaq, Irwin, Mountain and others. Features unattended, scheduled backups.*

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NEW ***With three user levels,*** *begin with the basics and add more features when you're ready. Optional password protection. (Also included in PC Shell,™ below.)*

Quick, easy file selection. *Pick the files or directories you want and save your selections in a file for use later.*

NEW ***Fast and economical.*** *Backup at speeds up to 2.5 MB per minute. Our new high-speed compression reduces disk/tape usage up to 60%.*

DOS Shell

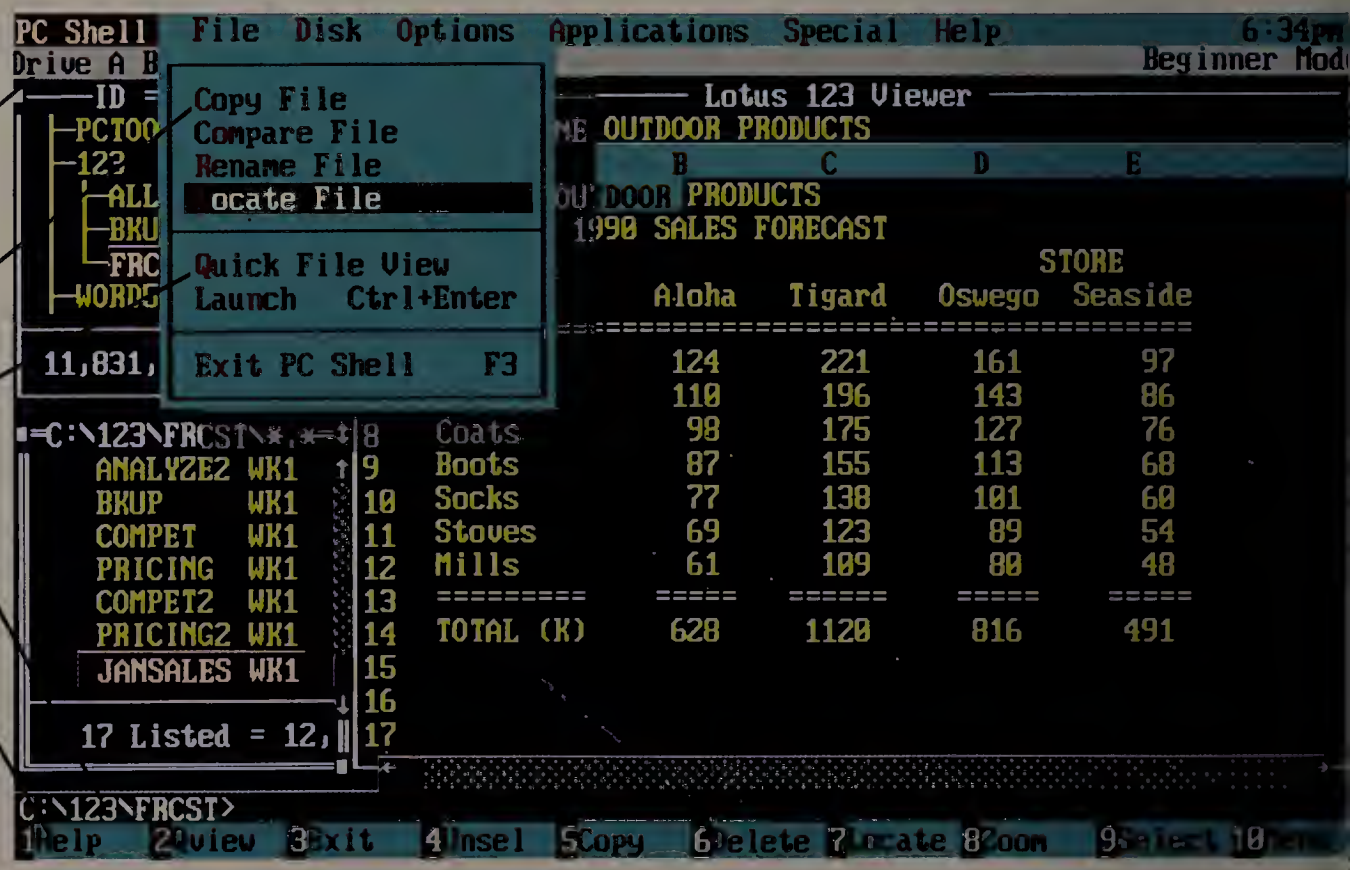
Network support. *Working with files on Novell and IBM PC LANs is as easy as if they were right inside your PC.*

NEW ***Transfer files to your laptop*** *with a built-in version of LapLink from Traveling Software.*

NEW ***Over 30 file viewers*** *let you browse through an entire directory of files in a matter of seconds.*

NEW ***Resident DOS prompt.*** *Hot-key into PC Shell and execute any DOS command without leaving your main program.*

NEW ***With user-definable function keys,*** *any of PC Shell's 60 functions are within easy reach.*



In 1989, PC Tools established itself as the world's leading utility product, not only by selling 711,000 copies, but also by receiving nearly every editorial award possible in its class. This year, we're proud to announce PC Tools Deluxe Version 6–more than 70 new features that set new standards for technical depth and ease of use.

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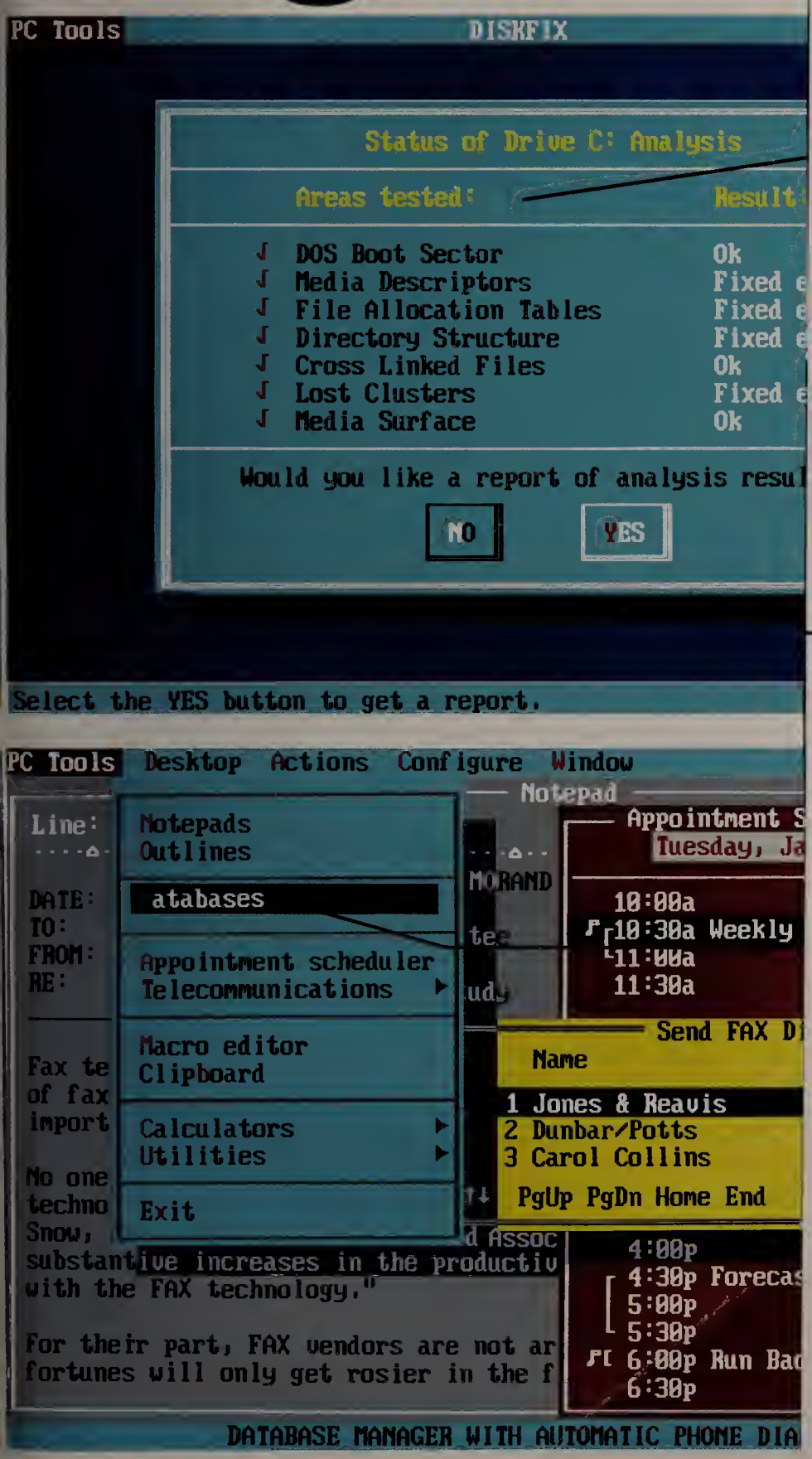

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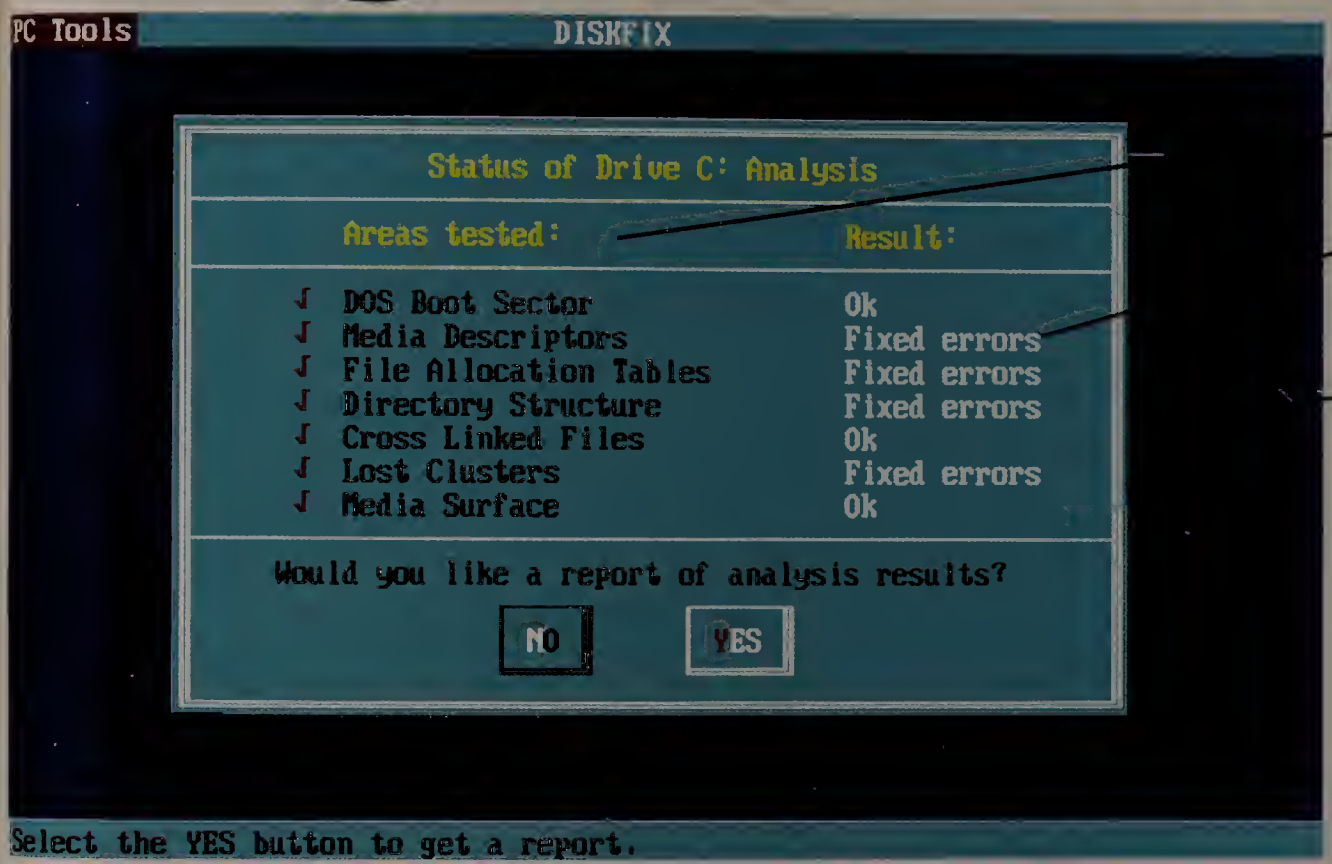

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NEW ***Simple and automatic.*** *DiskFix analyzes and repairs disks on its own. It doesn't ask you to become an expert.*

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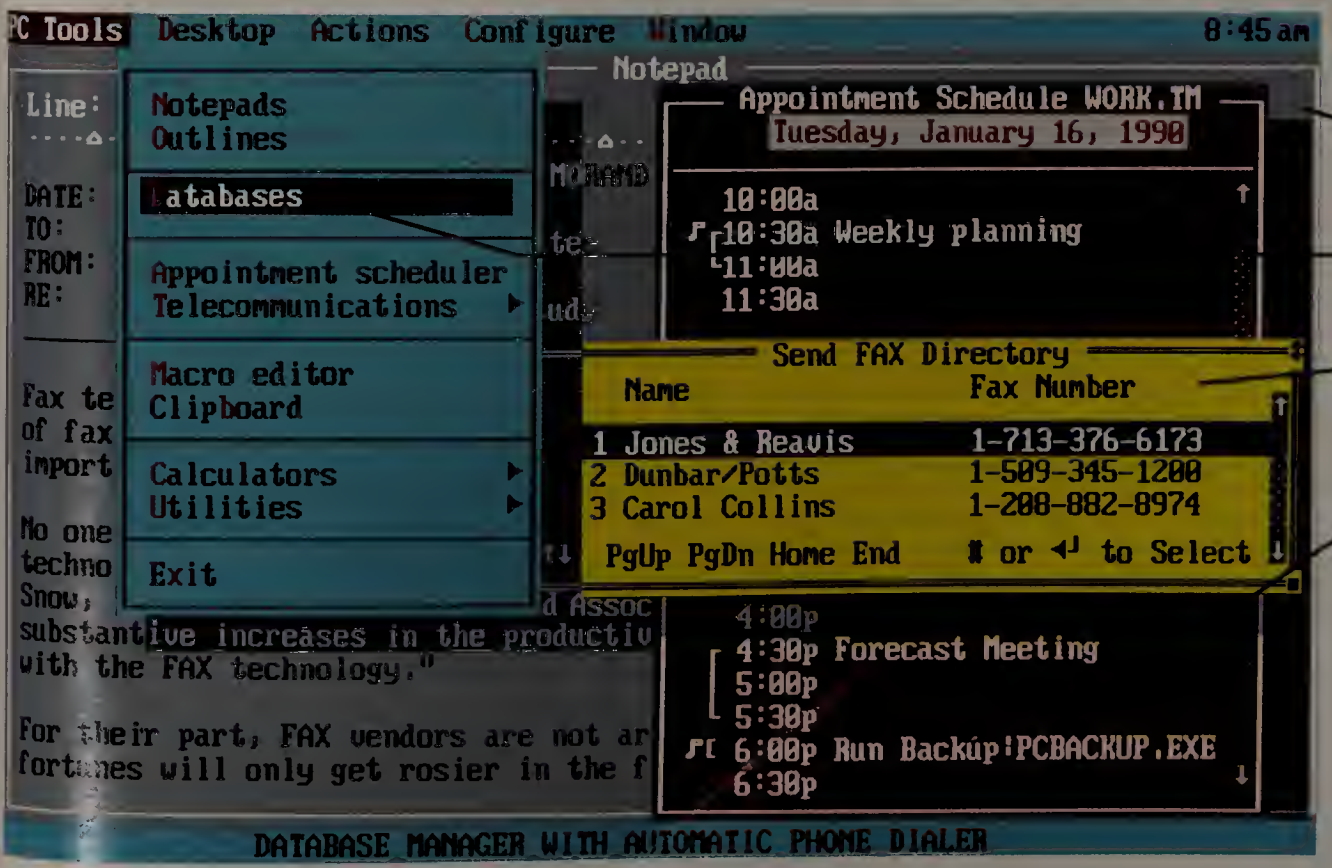

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Twelve integrated applications, *available on demand. Uses only 40 KB RAM in resident mode.*

NEW ***Our dBASE-compatible database*** *lets you manage lists, create form letters or autodial calls.*

NEW ***Fax support.*** *With a fax board you can send an urgent document anywhere in the world. Works over networks.*

The scheduler *not only tracks appointments, but can do a backup or download e-mail at a predetermined time.*

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★ **NEW! VARIABLE USER LEVELS.** Beginner, Intermediate, and Advanced modes for PC Backup and PC Shell.

■ **EASY TO USE.** Pull-down menus, context-sensitive help, full mouse support. Movable, resizable windows. IBM SAA/CUA compliant.

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★ **NEW! DISKFIX.™** The most comprehensive disk-repair program available. Quickly and automatically diagnoses and repairs lost or cross-linked files and directories, file allocation errors and corrupt directory/partition information.

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★ **NEW! COMPARE.** Checks backup against current files–produces report of differences.

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★ **NEW! STANDARD DOS FORMAT.** Backup disks are now readable by DOS. Saves time and allows re-use of media without formatting.

★ **NEW! ADAPTIVE DATA COMPRESSION.** High-speed compression reduces disk/tape usage by up to 60%.

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■ **SCHEDULED BACKUPS.** Schedule backups to run automatically.

■ **DISK/TAPE/TIME ESTIMATE.** Dynamically estimates disk/tape and time usage for backup.

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★ **NEW! LOCATE.** Locate your files by name or by content; then load selected data and its parent application in one step.

★ **NEW! RESIDENT DOS PROMPT.** Hot-key into PC Shell and execute any DOS command without unloading your main program.

★ **NEW! FILE TRANSFER.** Transfer files to a laptop via serial cable with an integrated version of LapLink from Traveling Software.

★ **NEW! PROGRAMMABLE FUNCTION KEYS.** Customize PC Shell's function keys for quick access to your most-used commands.

■ **FAST, EASY OPERATION.** Invoke standard DOS commands (Copy, Rename, Delete, etc.) with just a single keystroke.

■ **SORT, MOVE, PRUNE & GRAFT.** Reorder and reorganize files and directories with ease.

FILE VIEWERS

WORD PROCESSORS
- WordPerfect
- MS Word
- MS Works
- Wordstar
- Wordstar 2000
- XyWrite
- Multimate
- MS Windows Write
- PC Tools Notepad
- ASCII Text

SPREADSHEETS
- Lotus 1-2-3 (1A, 2.X)
- Symphony
- MS Excel
- MS Works
- Quattro
- Words and Figures
- Twin
- VP-Planner Plus

DATABASES
- dBASE III, IV
- Paradox
- R:Base
- FoxBASE
- Clipper
- dBXL

OTHER
- Binary
- PC Paintbrush (PCX graphics)
- ARC, LZH, PAK, PKZIP and ZOO catalogs

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■ **MEMORY RESIDENT.** Optionally loads memory-resident. Use on top of other applications. Requires only 10 KB RAM.

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★ **NEW! TELECOMMUNICATIONS.** Send faxes or e-mail through services such as MCI, Compuserve, and EasyLink. Easily add other services. Can run in background.

★ **NEW! CALCULATORS.** HP-11C scientific, HP-12C financial, HP-16C programmer's, and algebraic calculators.

■ **NOTEPADS.** Includes spelling checker, block moves, search/replace, and more.

■ **APPOINTMENT SCHEDULER.** Plan and prioritize your schedule. Do a backup, send a fax, or download e-mail at a predetermined time.

■ **CUT AND PASTE.** Capture work from your screen and "paste" it into a different program.

■ **MEMORY RESIDENT.** Optionally loads memory-resident. Use on top of other applications. Requires less than 40 KB RAM.

OTHER FEATURES

★ **NEW! PC CACHE.** Increases system performance. Includes optional write-caching. Supports conventional, extended and expanded (EMS) memory.

■ **COMPRESS.** Unfragments files to speed disk access.

■ **PC SECURE.** Password protection for sensitive data and program files; encrypts data to U.S. Department of Defense (DES) standards.

REQUIREMENTS

IBM PC, XT, AT, PS/2 or 100% compatible with DOS 3.0 or higher and 512KB RAM. Hard disk recommended. Supports Microsoft mouse driver version 6.14 or higher, Logitech/Dexxa mouse drivers version 3.4X or higher, or 100% compatible.

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A new vision for 1990.

Central Point Software INC.™

15220 N.W. Greenbrier Pkwy. #200, Beaverton, OR 97006, (503) 690-8090

RAM overhead is 43K. Funk Software, Inc., 222 Third St., Cambridge, MA 02142; 800/822-3865, 617/497-6339, 617/547-1031 (fax). List price: $79.95.

Reader service no. 643

Worksheet Utilities 1.01

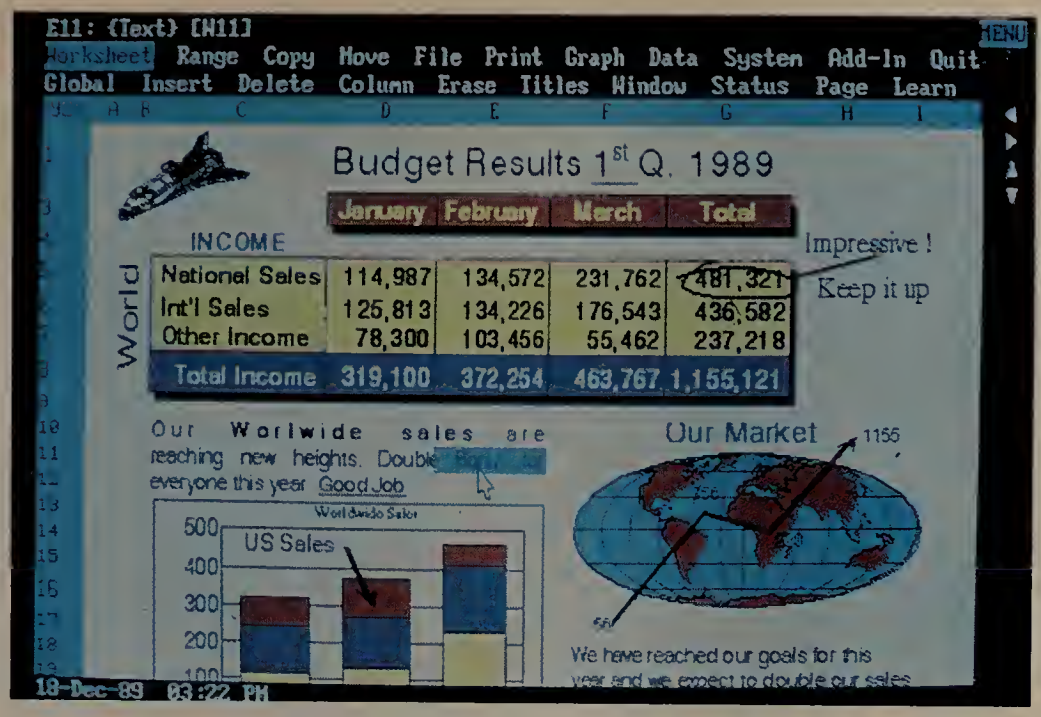
As with *Look&Link*, release 2.2 almost put this product out of business: The print-setting sheets, search and replace functions, and multiple-column-width options are redundant if you already have *2.2*. However, you'd have to buy release 3 to get a formula editor as outstanding as *Worksheet Utilities*'. Occupying only 23K of RAM, this *1-2-3* add-in lets you view long formulas in their entirety and switch between cell-address and range-name display. You can also select and copy formula elements, paste range names and functions, and debug formulas by testing them piecemeal. Funk Software, 222 Third St., Cambridge, MA 02142; 800/822-3865, 617/497-6339, 617/547-1031 (fax). List price: $99.95.

Reader service no. 644

Budget Express 1.0

Most people arrange budget and accounting worksheets hierarchically, with rows holding expense items and columns representing months. An invaluable add-in that occupies 60K of RAM, *Budget Express* works wonders with such worksheets. An outliner helps you organize row labels into a pattern of indents; based on that pattern, *Budget Express* can automatically insert group and grand totals and hide detail rows (which you can password protect). Want to consolidate the sums of rows in different worksheets? *Budget Express* can do it by label, and if the wording doesn't exactly match, you can specify permitted variations. The program automatically enters monthly column headings, and it generates columns of monthly, quarterly, or yearly totals. If that's not enough, *Budget Express* is also a veritable Swiss army knife of commonsense what-if enhancements, some of which release 3 can't touch. Symantec Corp., 10201 Torre Ave., Cupertino, CA 95014; 800/441-7234, 800/626-8847 California, 408/253-9600, 408/252-4694 (fax). List price: $149.

Reader service no. 645



Impress puts a new interface on 1-2-3. Not only can you show graphs in a worksheet, but you get superb control over format, fonts, and colors.

Delta-Manager 1.0

If you've ever guessed at numbers (put a budget together lately?), you'll appreciate *Delta-Manager*'s approach to uncertainty. Instead of single values, you enter data as high-low ranges. The program assumes the data to be normally distributed and takes your high and low values to be the standard error. From then on, all your calculations reflect the appropriate range of uncertainty, which you can adjust to a 68, 95, or 99.7 percent confidence level. This add-in beats whistling in the dark and takes up only 41K of RAM. PC Publishing, Inc., 1801 Avenue of the Stars #815, Los Angeles, CA 90067; 800/634-4555, 213/556-7987 (fax). List price: $99.95, free with upgrade to *Impress 2.0*.

Reader service no. 646

Impress 2.0

I featured this dazzling add-in interface and report enhancer in my May column. *Impress* provides mouse control of *1-2-3* menus, *Excel*-like manipulation of column width and row height, and the ability to display and print graphs along with the worksheet. Add an incredible drawing module for enhancing graphs, excellent font and color control, and formatting style sheets, and you'll wonder how they limit the RAM requirement to 83K. PC Publishing, 1801 Avenue of the Stars #815, Los Angeles, CA 90067; 800/634-4555, 213/556-3630, 213/556-7987 (fax). List price: $149.95.

Reader service no. 647

Sideways 3.21

Good old *Sideways*. It doesn't know about fancy fonts, it doesn't do graphics, and it works only with dot matrix printers. But this 72K add-in has a talent you won't find anywhere else: It prints wide spreadsheets sideways. Old friends like this are irreplaceable. Funk Software, Inc., 222 Third St., Cambridge, MA 02142; 800/822-3865, 617/497-6339, 617/547-1031 (fax). List price: $69.95.

Reader service no. 648

Write-In 1.2

If you spend your days and nights inside *1-2-3*, popping out occasionally to dash off a letter, you should give *Write-In* a try. For a fairly hefty tariff of 110K of RAM, this add-in word processor provides capable editing and formatting tools, just a hot key away from your favorite program. You can establish hot links to spreadsheet data and create form letters, and the program saves documents automatically. *WordPerfect* it's not, but the *1-2-3*–like menus make for quick learning. Blossom Software Corp., One Kendall Square, Bldg. 600, P.O. Box 9171, Cambridge, MA 02139; 617/738-1516, 617/566-4936 (fax). List price: $129.95.

Reader service no. 649

Richard Scoville, a writer and consultant based in Durham, North Carolina, is a PC World *contributing editor.*

For more information about all products in this section, circle reader service no. 904.

PERSONALIZING dBASE

RATHER THAN PART WITH HARD-EARNED SKILLS, MOST OF US PREFER TO PART WITH A FEW DOLLARS FOR UTILITIES THAT CAN SMOOTH OUT dBASE'S ROUGH SPOTS.

ALAN SCHWARTZ

Users love to complain about its deficiencies, but *dBASE* in one version or another remains the de facto data base standard. The shortcomings of this venerable line have spawned an entire utilities industry bent on filling the gaps.

Since *dBASE II* was introduced nearly a decade ago, I've discovered a number of indispensable helpmates. Some offer easier ways to accomplish *dBASE* tasks, while others provide capabilities you can't get in any *dBASE* version. Here you'll find handy utilities for editing, reporting, and troubleshooting, plus a couple of tools that can help improve the appearance and functionality of *dBASE* applications.

I've left out one vital product, simply because it's more appropriate for Judy Getts's guide to communications utilities. I would never tackle any data management task without PKWare's *PKZIP*, a file compressor that makes short work of backing up the dozens (sometimes hundreds) of files that compose a *dBASE* application. *PKZIP* can also compress data files by up to 90 percent if there are many blank fields.

All of the products described here will work with the common dBASE dialects: *dBASE III, dBASE III Plus, dBASE IV, Foxbase+, FoxPro, Clipper, DBXL,* and *Quicksilver.*

QEdit 2.1

Any version of *dBASE,* including *dBASE IV,* could use better text-editing features. A text editor built for speed and sparing use of memory, *QEdit* installs easily into the *dBASE* environment, supplanting the native text editor and occupying a mere 48K. *QEdit* offers optional word wrap and automatic indentation, along with parentheses matching, line drawing, a cut-and-paste clipboard, and the ability to open eight files simultaneously. Pulldown menus provide quick access to important features, and you can customize keyboard commands to match your favorite word processor's. You can even adapt help screens to suit your keystroke preferences. SemWare, 4343 Shallowford Rd. #C-3, Marietta, GA 30062-5003; 404/641-9002, 404/640-6213 (fax). List price: $54.95.

Reader service no. 650

Saywhat 3.6

A marvelous screen painter, *Saywhat*'s main virtue is simplicity. Because this program is such a breeze, I often use it to sketch user interfaces on the fly when discussing proposed applications with clients; one option even lets you flip through dummied application screens in slide-show fashion. *Saywhat* also overcomes *dBASE III Plus*'s lack of screen save, windowing, and light-bar–menu commands, enabling you to build these features into front ends. The code for screens can be freely distributed with your applications. Software Science, Inc., 100 Valley Dr., Brisbane, CA 94005; 800/468-9273, 800/231-7849 California, 415/467-6840. List price: $49.95.

Reader service no. 651

UI2 2.1

UI2 picks up where *Saywhat* leaves off. It's a heavy-duty development tool that automatically builds entire applications, thanks to a full-featured screen painter that folds screens into supplied application templates. Expect support for such fancy features as pulldown menus, pop-up windows, data validation, scrolling lookups, and multifile relationships—in any of the popular dBASE dialects. Since you select the dialect when your application is generated, you can create applications specific to *Clipper, Foxbase+,* and so on, exploiting the extended features of each. But be forewarned: This is a pro-

fessional's tool, and anyone wishing to control the development process fully must master *UI2*'s difficult template language. WallSoft Systems, Inc., 233 Broadway #869, New York, NY 10279; 800/233-3569, 212/406-7026, 212/693-0979 (fax). List price: $595.

Reader service no. 652

R&R Relational Report Writer 3B

The undisputed reporting champ of the *dBASE* world, *R&R Relational Report Writer* can produce sophisticated reports that would be very difficult to program by hand. It supports *dBASE*, *Clipper*, and *Foxbase* index formats, and a new option actually generates dBASE code in half a dozen dialects. *dBASE IV*'s internal report writer may be a worthy challenger, but *R&R*'s ability to grab data from any file, link and sort, lay it out, and go, put the utility light-years ahead of *dBASE III Plus*'s report generator. Concentric Data Systems, 110 Turnpike Rd., Westborough MA 01581; 800/325-9035, 508/366-1122, 508/366-2954 (fax). List price: $149, *Foxbase/Clipper* index support module $49.95.

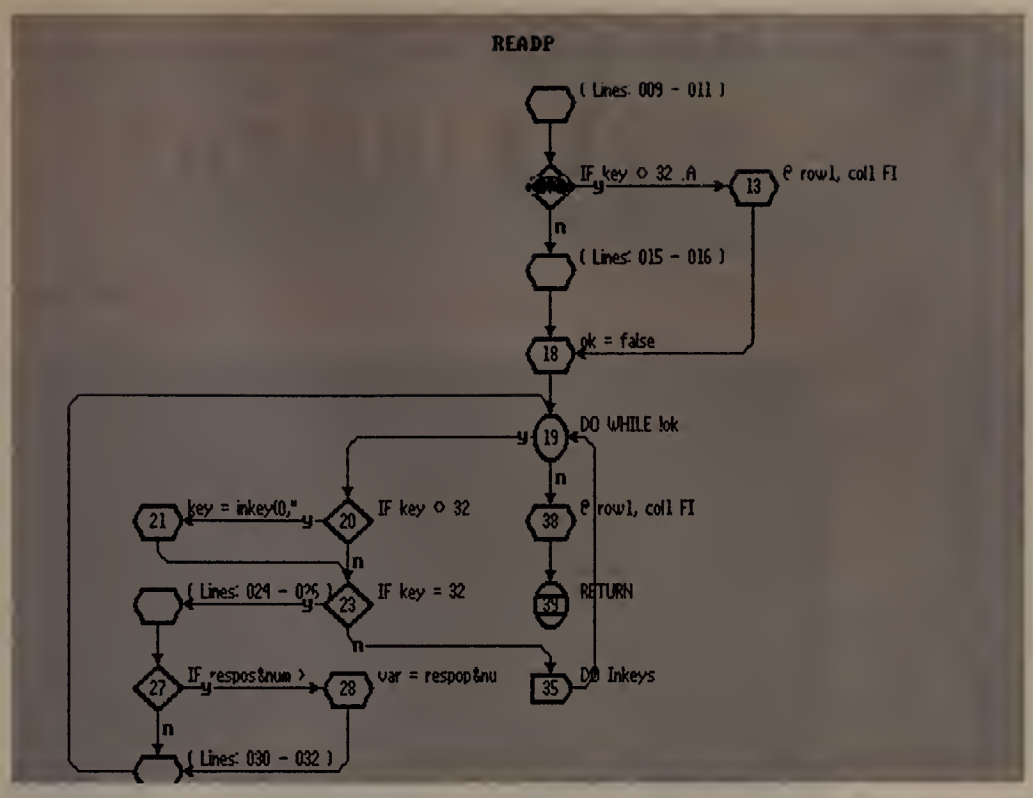
Reader service no. 653

dGE 3.0

Among users of *dBASE* and its variants, only devotees of *DBXL* enjoy support for business graphics right out of the

box. *dGE* is a spiffy add-on library for the rest of us, providing basic business charting on screen or printed from *dBASE*. This menu-driven chart maker offers basic bar, pie, line, polygon, and high-low-close graphs, all of which link to data in DBF files. *dGE* generates command files that can be executed from within *dBASE* applications; a run-time module lets you distribute applications exploiting *dGE*'s capabilities. Pinnacle Publishing, P.O. Box 8099, Federal Way, WA 98003; 800/231-1293, 206/941-2300, 206/946-1491 (fax). List price: $195.

Reader service no. 654



For developers, there's nothing quite like Clear. Enter the name of a dBASE module, and Clear gives you a flowchart diagramming the logic tree.

dQuery 3.0

dQuery brings query-by-example (QBE) capability to *dBASE III Plus* and earlier versions. As with *Paradox* and *dBASE IV*, you build queries by filling in boxes representing selected fields in linked data files. *dQuery* extracts the data far faster than any version of *dBASE* can, and with results every bit as accurate as those produced by a command-driven query. Interestingly, the program also lets you enter SQL queries, which generate QBEs; in turn, QBEs generate SQL code. Although the program isn't designed to link to an SQL engine, you can at least view SQL listings, making *dQuery* a useful SQL learning tool. Quadbase Systems, Inc., 790 Lucerne Dr. #51, Sunnyvale, CA 94086; 408/738-6989, 408/738-6980 (fax). List price: $195.

Reader service no. 655

dSalvage Classic 1.44

dSalvage is the *Norton Utilities* of the *dBASE* world. This utility automates the diagnosis and repair of damaged *dBASE* data files, enabling you to restore damaged or missing headers, eliminate garbage characters, and reorganize displaced records. It can even recover accidentally ZAPped files. The program's menu will meet the needs of most users, and those who wish to explore DBF files at the byte level can also access well-documented technical tools from the command line. Comtech Publishing Ltd., P.O. Box 456, Pittsford, NY 14534; 800/456-7005, 716/586-9725 (fax). List price: $99.95.

Reader service no. 656

Clear 2.1 for dBASE

Ever wish you had the original programmer's sketch of an incredibly complicated *dBASE* application? *Clear* provides the next best thing: flow diagrams that enable you to step through the logic of a *dBASE* program module, or view the logic tree that links an entire system together. Simply enter the name of the program module you want to examine, and *Clear* digests the command files, sending its clear-cut,

graphics-based diagrams to the screen or printer (the diagrams are often pretty dense, so a high-resolution printer such as the LaserJet is recommended). You'll need Hercules, CGA, EGA, or VGA graphics; all major dialects of dBASE are supported. Clear Software, Inc., 1440 Beacon St., P.O. Box 909, Brookline, MA 02146; 800/338-1759, 617/232-9788 ext. 30 (fax). List price: $199.95.

Reader service no. 657

Alan Schwartz is a contributing editor for PC World.

For more information about all products in this section, circle reader service no. 905.

TIME-SAVERS FOR DESKTOP PUBLISHERS

PUT SOME ZIP IN THAT SLUGGISH INTERFACE AND LIVEN UP YOUR OUTPUT WITH SHARP NEW FONTS AND HIGH-QUALITY CLIP ART.

RICHARD JANTZ

MARI KANE

If your adventures in desktop publishing are anything like mine, your dream utility is a pop-up chain saw that cuts down any obstacles standing between you and your deadline. I have yet to find anything quite that powerful, but over the years I've stocked my hard disk with well-honed tools that can save valuable time.

Some of these utilities are specifically designed to work with those two titans of desktop publishing, *Ventura* and *PageMaker*, while others provide file management, fonts, and print spooling for a whole range of programs. And with a few exceptions, the programs described here cost under $150.

MouseWare 1.0

Ventura wastes your time by constantly making you move the mouse to click the OK box, but with this bargain utility installed, you just press the mouse's right button. Or you can use a hot key to turn the right button into a zoom control, then change screen views (reduced, normal, enlarged) with a click. Other hot keys conveniently let you rev up or slow down the mouse's travel speed. Because *MouseWare* takes about 18K of RAM away from memory-hungry *Ventura*, it works best if you have expanded memory. Metroplex Digital Corp., P.O. Box 815729, Dallas, TX 75381-5729; 214/231-8944. List price: $19.95.

Reader service no. 658

The Soft Kicker Plus 2.0

Ventura users also lose precious minutes messing with the scroll bars in order to reposition a page. With this display enhancer, which works with either *Ventura* or *Windows* (provided you have a VGA or EGA graphics adapter), the page scrolls automatically as you type or move the mouse. Better still, you can use *The Soft Kicker Plus* with *Ventura*, *PageMaker*, and other *GEM* and *Windows* programs to extend the virtual resolution to as high as 1024 by 1024 (special algorithms create the illusion of that many pixels, delivering surprisingly readable tiny text). Aristocad, 1650 Centre Pointe Dr., Milpitas, CA 95035; 800/338-2629, 800/426-8288 California, 408/946-2747, 408/946-4032 (fax). List price: $139.

Reader service no. 659

PageMaker Portfolio: Designs for Business Communications

This comely collection of 18 templates from Aldus (for *PageMaker 3.0* or a later version) can make order out of design chaos. Just add your own text and graphics to the prefab layouts for reports, proposals, handbooks, business plans, and so forth, and—voilà!—you've got a professional-looking business document. You also get a handy tutorial and tips on using type, graphics, and layout grids; versions are available for either PostScript or LaserJet printers. Aldus Corp., 411 First Ave. S, Seattle, WA 98104; 206/628-2320, 206/343-4259 (fax). List price: $99.

Reader service no. 660

VP Toolbox 3.0 Standard Edition

Style sheet and file-management features abound in this handy *Ventura* add-in. You can easily compare style sheets, copy paragraph tags (which define type specifications) from one style file to another, and print reports with samples of each tag. The program also makes it easy to move, copy, and delete chapters.

Using its own data base to keep track of your documents, *VP Toolbox* wisely warns you if you're deleting a file that ap-

pears in another document. SNA Inc., P.O. Box 3662, Princeton, NJ 08543; 609/799-9605, 609/799-9639 (fax). List price: $99.

Reader service no. 661

Command Post 6.2

For those who use *PageMaker* or other *Windows* programs, this low-cost product injects file-management oomph into *Windows'* MS-DOS Executive. Added windows and commands let you display a tree-structured disk directory, arrange and stack overlapping or tiled windows, and create custom menus with selections to launch programs. *Command Post* requires 18K to 24K of memory, and it includes an on-screen time/date display and optional screen blanker. Due out by the time you read this, version 7.0 will provide additional file-management features for *Windows 3.0*. Wilson WindowWare, 2701 California

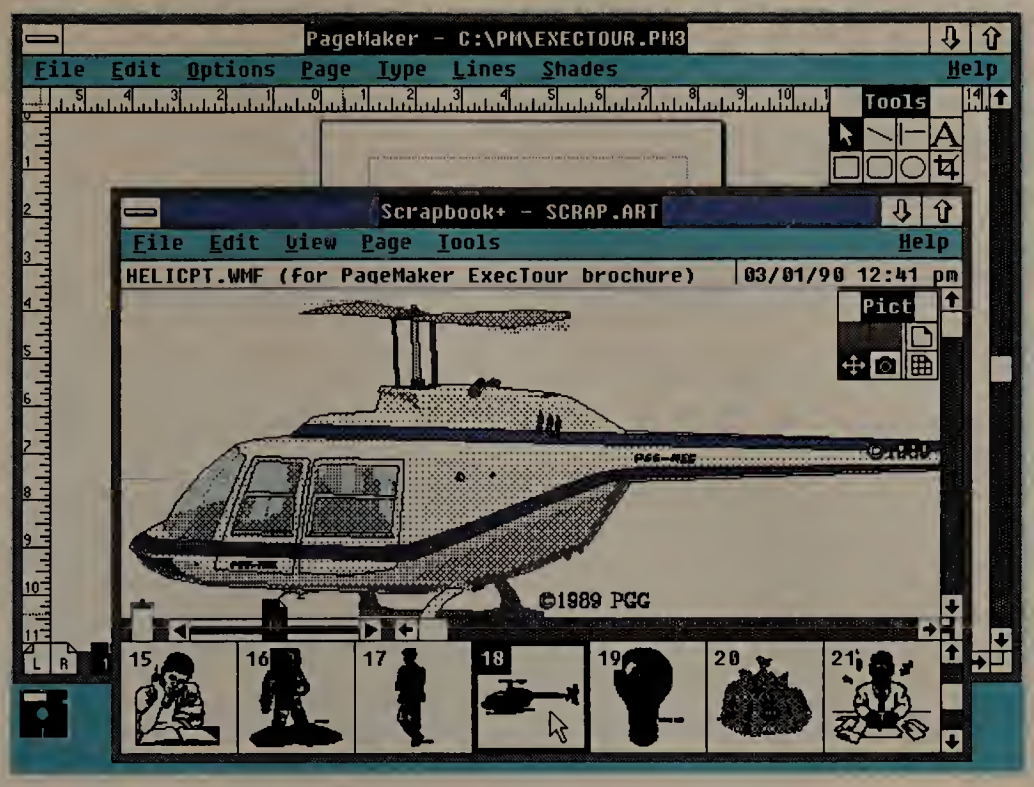
St. SW #212, Seattle, WA 98116; 800/762-8383, 206/937-9335, 206/935-7129 (fax). List price: $49.95.

Reader service no. 662

Pub Pak 1 Newsletters

For my money, the best off-the-shelf typefaces for desktop publishing are the more than 200 available from Adobe, the company that invented PostScript. With this value-priced package, you get not only three PostScript typefaces (Century Old Style, ITC Galliard, and ITC Franklin Gothic) but tips on how to use them by art director Roger Black of *Newsweek*, the *New York Times*, and *Rolling Stone* fame. Just think, DTP by Roger and me. Adobe Systems Inc., 1585 Charleston Rd., P.O. Box 7900, Mountain View, CA 94039; 800/344-8335. List price: $395.

Reader service no. 663



Scrapbook+ helps you organize scanned images. You can view multiple images on a single screen and paste them into other Windows applications.

Bitstream Presentations Collection

I recommend Bitstream's high-quality typeface collections for any LaserJet user who wants to build up a type library. The versatile *Presentations Collection* contains Slate and Swiss Condensed, plus a splendid group of headline typefaces, including Dom Casual, Futura Black, Handel Gothic, and Park Avenue. You can also use Bitstream typefaces to generate scalable fonts for use on PostScript printers. Bitstream, Inc., Athenaeum House, 215 First St., Cambridge, MA 02142; 800/522-3668, 617/497-6222. List price: $295.

Reader service no. 664

UltraScript PC 2.1

This ingenious product produces PostScript-compatible output on LaserJet, ink jet, dot matrix, and other printers (see "PostScript the Hard Way," May 1990). Though not as fast or reliable as a PostScript printer, *UltraScript PC* emulates fancy PostScript graphics and produces good-looking type, offering a standard selection of 25 PostScript-equivalent fonts (*UltraScript PC Plus* offers 47 fonts). Best of all, you can print directly from inside *Ventura, PageMaker*, and other programs. QMS/Imagen Corp., 2650 San Tomas Expwy., Santa Clara, CA 95052; 800/635-3997, 408/986-9400, 408/727-3725 (fax). List price: $195, *Plus* version $445.

Reader service no. 665

PrintCache 2.2

This proficient print spooler (formerly called *LaserTorq*) cuts the time it takes to send a document to the printer, letting you resume work much sooner. The program can even produce full-page 300-dpi graphics on a LaserJet that

has only 512K of memory. *PrintCache* also provides fast print buffering for ink jet and dot matrix printers as well as for plotters. LaserTools Corp., 1250 45th St. #100, Emeryville, CA 94608; 800/767-8004, 415/420-8777, 415/420-1150 (fax). List price: $149.

Reader service no. 666

Scrapbook+ 2.0

If you have a truckload of scanned images, clip art, and other graphics files, *Windows*-based *Scrapbook+* can help store and retrieve them efficiently. This image manager enables you to scroll quickly through a custom portfolio of time- and date-stamped images, view multiple images as miniature thumbnail sketches, and painlessly paste images into other *Windows* applications. The program supports a variety of graphics and text formats and includes its own screen-capture utility. Eikon Systems, Inc., 989 E. Hillsdale Blvd. #260, Foster City, CA 94404; 415/349-4664, 415/349-4896 (fax). List price: $149.95.

Reader service no. 667

Contributing editor Richard Jantz is the author of Ventura Publisher: Beyond the Basics *(John Wiley & Sons, New York, 1990).*

For more information about all products in this section, circle reader service no. 906.

COMMUNICATIONS SHAREWARE: THE PEOPLE'S CHOICE

TO SAVE SERIOUS TIME AND MONEY ON LINE, LOOK NO FURTHER THAN YOUR FAVORITE BBS. THERE ARE EIGHT PROVEN VOTE-GETTERS FOR $79 OR LESS.

JUDY GETTS

MICHAEL SEARS

It should come as no surprise that the best communications utilities are shareware. What better consumer product test labs than on-line services and BBS's? Countless modem users are not only eager to download and test-drive the latest error-checking protocol or E-mail reader, they're equally enthusiastic about offering suggestions for improvement.

With a few exceptions, all the programs recommended here have weathered public scrutiny and endured as venerable favorites. Some, like Vern Buerg's *List*, have been on the boards for years and enjoy a popularity that keeps growing. A few, like Matt Thomas's *MPt Protocol* error-checking protocol, are hot out of the debugger but show signs of one day dwelling in every modem user's communications subdirectory.

Most of these utilities require a registration fee of $20 to $25 (the most expensive is *TAPCIS*, which costs $79). All the programs can be downloaded from nearly any on-line service; most can probably be found on a BBS in your area. I've included the programs' file names in parentheses to help you find them on line.

TAPCIS 5.2, The Access Program for the CompuServe Information Service (TAPCIS52.ZIP)

A must-have for the CompuServe user, *TAPCIS* automates CompuServe sessions, automatically dialing, batch downloading, uploading E-mail, and capturing forum messages—all while you watch. *TAPCIS* includes a built-in editor, an address book, print and save functions, and the ability to do keyword searches through CompuServe file collections. It will save you a bundle. Support Group, Inc., P.O. Box 130, McHenry, MD 21541; 800/872-4768, 301/387-7322 (fax). Registration fee: $79.

Reader service no. 668

List 7.3d (LIST73D.ZIP)

The ultimate file reader, *List* lets you not only scroll through text and keep your place with bookmarks, but mark, delete, and export lines. The latest version includes windowing, printing, a modem dialer, and a bunch of file-management capabilities, including the ability to view the contents of an archive file. It's terrific for reading E-mail or downloaded software documentation. Vernon D. Buerg, 139 White Oak Cir., Petaluma, CA 94952; 707/778-8944, 707/778-8841 (both numbers are BBS's). Registration fee: $20.

Reader service no. 669

PKZIP 1.10 (PKZ110.EXE)

As the modem world's file compressor wars sizzle to an end, *PKZIP* has emerged the victor—although you may want to keep on hand a copy of its archrival, the deposed archive standard *ARC*, just in

case you run across an ARC'd file. *PKZIP* quickly cuts files to about half their original size, saving you both disk space and phone time. The program provides ample com-

mands for managing file archives, including ones to attach comments, password-encrypt files, and move DOS files in and out of archive files without decompressing. PKWare, Inc., 7545 N. Port Washington Rd. #205, Glendale, WI 53217; 414/352-3670, 414/352-7176 (BBS). Registration fee: $25.

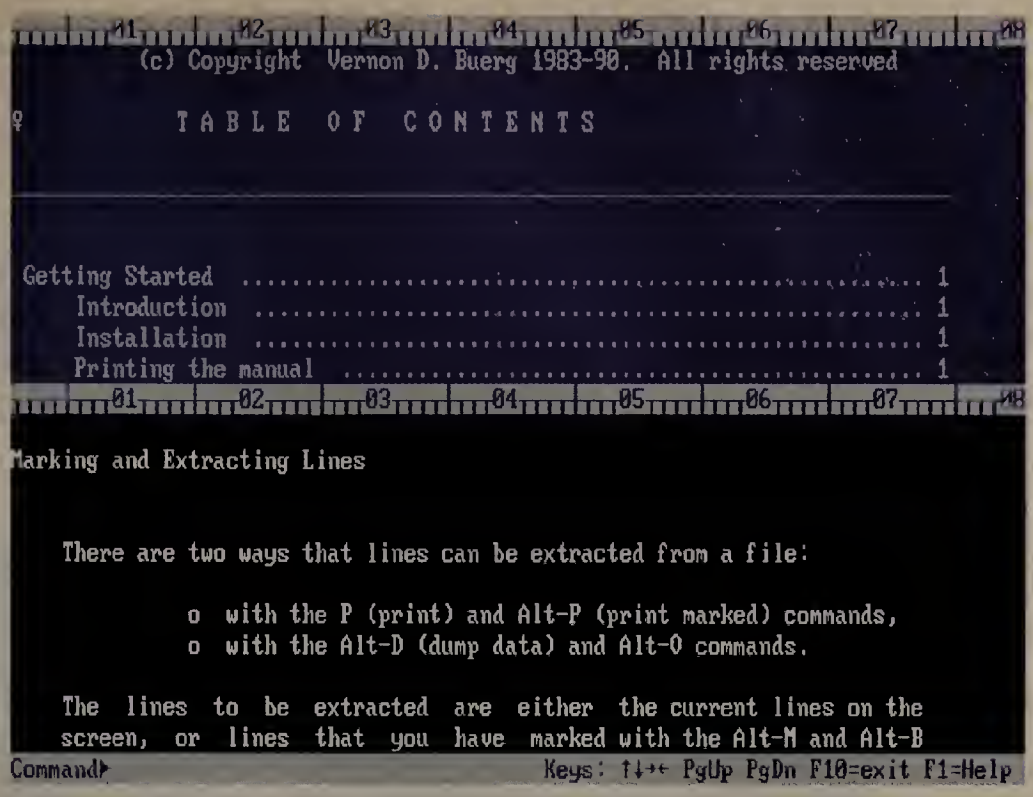
Reader service no. 670

Doorway 2.05 (DRWY205.ZIP)

Use *Doorway* to add complete remote capabilities to your favorite communications soft-

ware. Dial in and run applications like *1-2-3* or *WordPerfect* from afar, and *Doorway* will act as the magic portal between your communications software and applications. Marshall Dudley, 406 Monitor Ln., Knoxville, TN 37922; 615/966-3574 (BBS). Registration fee: $20.

Reader service no. 671



For a $20 registration fee, List version 7.3d provides file viewing and text editing features—perfect for downloaded documentation.

Most of these utilities require a registration fee of $20 to $25. All the programs can be downloaded from nearly any on-line service.

DSZ (DSZ.ARC)

Feeling gypped that your copy of *Crosstalk XVI* doesn't provide YMODEM-G? Annoyed that *Procomm Plus* still doesn't offer ZMODEM? Add those protocols and more to your communications software with this amazing protocol bundle. *DSZ* offers state-of-the-science versions of ZMODEM, YMODEM, YMODEM-G, XMODEM CRC, and 1K XMODEM; all are easy to tack on to your communications software. Omen Technology, Inc., P.O. Box 4681, Portland, OR 97208; 503/621-3406. Registration fee: $20.

Reader service no. 672

E-Z Reader 1.24 (EZ124B.ZIP)

If you dial BBS's that offer Qmail or MarkMail doors, you can download mail and conference messages for later perusal with this simple reader and mail handler. *E-Z Reader* lets you reply to mail with your favorite editor, then packs the messages into the BBS format for one-shot uploading. If your BBS calls are long distance, *E-Z Reader* will take the edge off your phone bill. Thumper Technologies, P.O. Box 471012, Tulsa, OK 74147. Registration fee: $25.

Reader service no. 673

MPt Protocol (MPT110.ZIP)

This error-checking protocol is an easy-to-use speed demon that offers batch transfers as well as full-screen help and status screens. Use *MPt Protocol* in conjunction with your favorite communications software for file transfers as fast as or faster than hyperspeed ZMODEM ones; in direct computer-to-computer links, *MPt Protocol* leaves that protocol miles behind. Few BBS's support it, but that may be changing. With luck, *MPt Protocol* could be the protocol of the future. MPt Software Co., P.O. Box 4694, Racine, WI 53404; 414/681-3282. Registration fee: $15.

Reader service no. 674

Viruscan 2.7V60 (SCANV60.ZIP)

From the world's most outspoken computer-virus epidemiologist, John McAfee, comes this virus hunter that scours floppy and hard disks for an entire FBI file of nasties, ranging from the elusive Polish Joker virus to the Ice-

landic-3 virus first fingered in—you guessed it—Iceland. The program is best suited to small infections. If disease is rampant, the documentation suggests seeking help from a professional (such as McAfee himself). McAfee Assoc., 4423 Cheeney St., Santa Clara, CA 95054; 408/988-3832, 408/970-9727 (fax). Registration fee: $25 for home use; site licenses required for corporate, agency, or organizational use.

Reader service no. 675

Judy Getts is a contributing editor for PC World.

For more information about all products in this section, circle reader service no. 907.

ARE YOU SATISFIED WITH YOUR SOFTWARE?

What *do* users want from their software and from their software suppliers?

Developers agonize over that question, but judging from the criticism that greets even best-selling applications, it's one they haven't yet fully answered. Admittedly, it's hard to come up with solutions that please everyone. To shed some light on these issues, *PC World* asked a cross section of business users to tell us where software companies are earning their keep and where they're falling down. We started with two telephone surveys and followed up with in-depth conversations with a dozen users who span the spectrum of PC customers. Here's what they told us, loud and strong.

High-end capabilities don't have to detract from a program's friendliness, says Alameda County civil engineer Mike Neary.

BOB HOLMGREN

First, users want ease of use—*true* ease of use, which doesn't necessarily mean an abundance of learning tools or a graphical user interface. Second comes a demand for closer links among applications—ways to ease the task of moving information between different packages and systems. Third, customers want solutions to today's problems: That means solid technical support, and software that runs on systems that are being used today.

Our telephone survey of 100 *PC World* readers (see the sidebar "Who Says Users Can't Get No Satisfaction?") shows that ease of use is the quality they value most in their applica-

ROBERTA FURGER

IN AN EXCLUSIVE PC WORLD SURVEY, EASE OF USE AND BETTER LINKS BETWEEN APPLICATIONS TOP EVERYBODY'S WISH LIST.

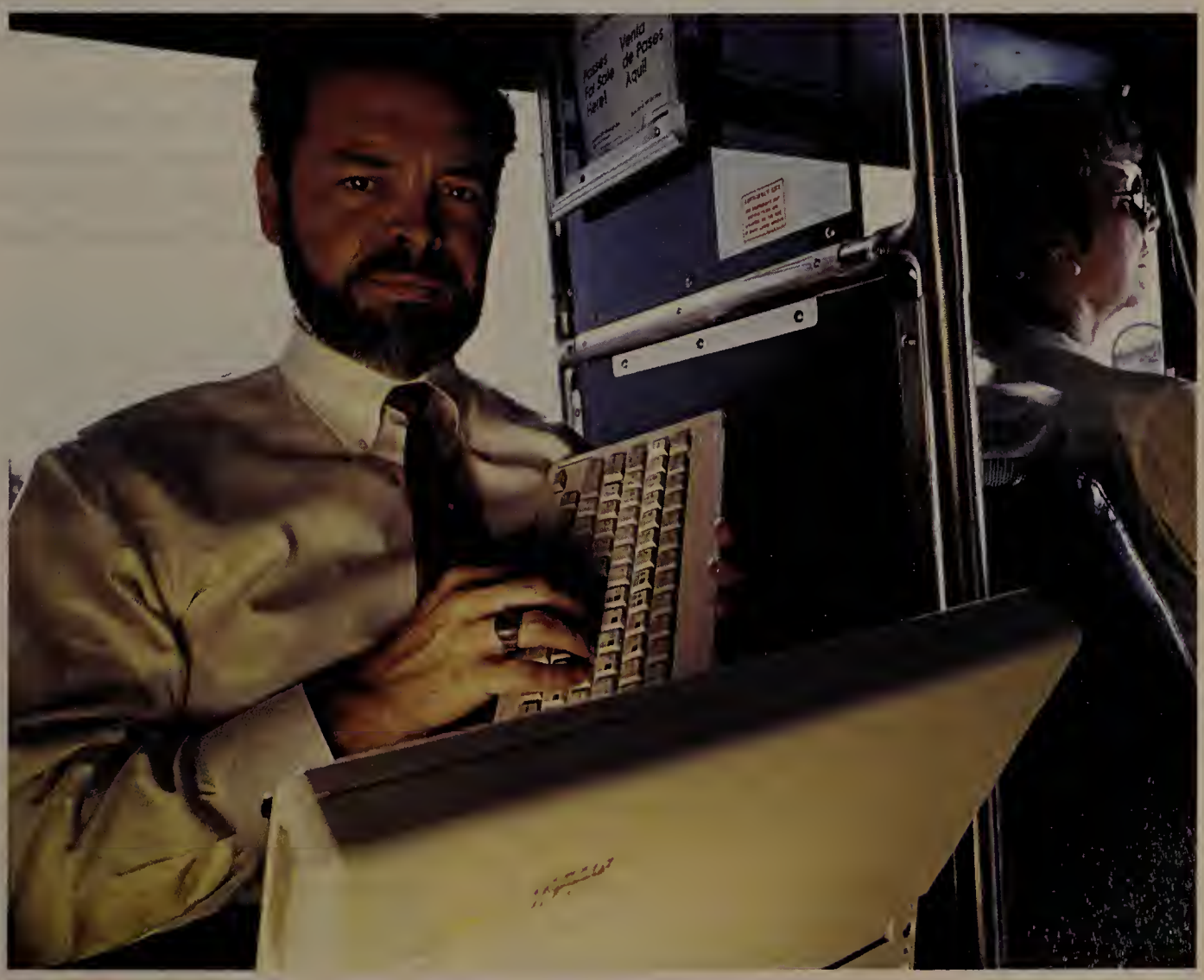
tions. When asked what they like least about their applications, users most frequently cite difficulty in learning and using a program.

"You see so few programs that you can sit down and use right away," says Fred Hilbers, an attorney in Birmingham, Alabama. "On more than one occasion, I've worked with an application that was obviously written by people who had never used a particular feature in the way an end user would."

The call for compatibility among applications also comes through very clearly from conversations with users, and the sentiment is substantiated by a survey of 500 business users throughout the country. Fifty percent of those surveyed report that easy-to-use import and export functions are a key factor in choosing software.

This issue becomes even trickier for users in larger organizations who need to share information with associates. Infor-

"It's a trade-off. The more features you require, the longer it can take to master an application," says Bill Forsythe, owner of Forsythe and Associates in Glendora, California.



FREDRICH CANTOR

"You see few programs that you can sit down and use right away," notes Fred Hilbers, an attorney in Birmingham, Alabama.

mation sharing across platforms is the key to using PCs more strategically, says Mary Dolce, a senior systems analyst with Walgreens, the national drugstore chain headquartered in Deerfield, Illinois. But, she adds, PC software has a long way to go before the process becomes straightforward.

Repeatedly, users express concern that developers focus too much attention on adding yet another feature to an application and not enough on solving the real-world problems facing PC users today. One such problem: technical support. In our national survey of business users, 46 percent of those questioned say they are less than satisfied with the service provided.

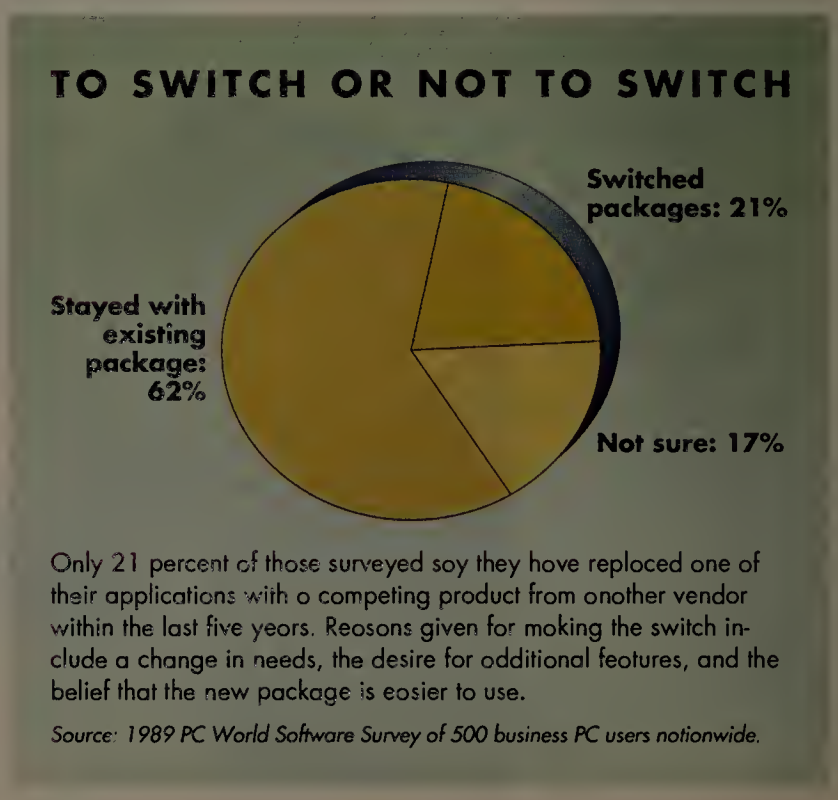
Some users find that technical support from vendors isn't necessarily the quickest way to get a problem solved. "A lot of times we've found that if we don't have the answer, they don't either," says Shelly Talso, director of administration for the Foundation for Teaching Economics, a small nonprofit organization in San Francisco.

WHAT EASE OF USE REALLY MEANS

Ease of use is a term that's bandied about by all developers, but many users argue that its true meaning has been lost in a sea of marketing hype.

"I'm always surprised at the things programs *can't* do, or at the roundabout process you have to go through to accomplish a particular task," says Hilbers. Most of the programmers creating applications don't actually use them, he believes, and they don't recognize how complicated certain tasks are for the average user.

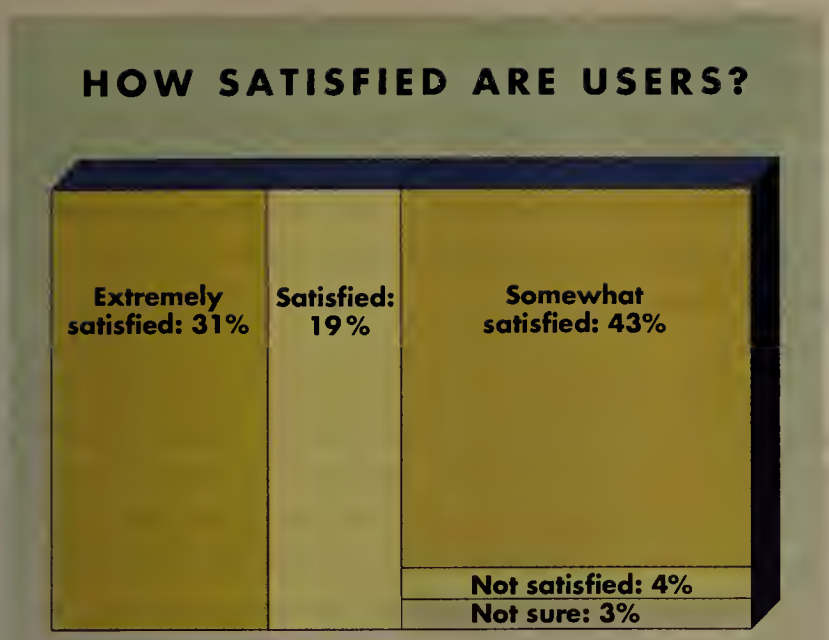
One key to ease of use, says Dolce, is keeping applications simple. Too often, she says, developers add feature after feature that few users will need. "Word processors are going that way, and so are spreadsheets and data bases—all the tools you



Only 21 percent of those surveyed soy they hove reploced one of their applications with o competing product from onother vendor within the last five yeors. Reosons given for moking the switch include a change in needs, the desire for odditional feotures, and the belief that the new package is eosier to use.

Source: 1989 PC World Software Survey of 500 business PC users notionwide.

MIKE CLEMMER



Overall, users give their primary applications high ratings; only 4 percent report dissatisfaction with overall performance.

Source: 1989 PC World Software Survey of 500 business PC users nationwide.

need for doing basic analysis." The result: Most of us are weighed down by features we'll never use. She'd prefer a modular approach, in which you could supplement a streamlined core package with add-on products for specialized features.

But high-end capabilities don't have to detract from a program's overall friendliness, says Mike Neary, a civil engineer with Alameda County's Public Works Department in Northern California. He points to *1-2-3* and *WordPerfect* as examples of programs that have added powerful new features without becoming overly complex.

Bill Forsythe, owner of Forsythe and Associates, a public-transit management firm in Glendora, California, shares Neary's philosophy. While some users find themselves overwhelmed by feature-laden applications, Forsythe says the "volume of features" is important to him. "It's always a trade-off. The more features you require, the longer it can take to really master an application," he notes. Forsythe adds that developers can go a long way toward leveling the learning curve by keeping the interface simple and making sure features are intuitively packaged.

Although a graphical user interface (GUI) has been touted as the ultimate in ease of use, only 35 percent of the *PC World* readers we surveyed are using a GUI (30 percent run *Windows*, 5 percent run OS/2 Presentation Manager). In fact, many of those we spoke with doubt that a graphical environment is necessarily the way to make PC use easier.

Forsythe, a *1-2-3* and *WordPerfect* user, has never felt it was worth investing the time to learn new applications. Like many others, however, he is intrigued by the prospect of easily switching between his favorite applications. He's ready and willing to switch to OS/2 when both *1-2-3/G* and the Presentation Manager version of *WordPerfect* appear.

As a user of both a Macintosh and a PC, Neary understands the benefits of graphical interfaces. But he says that while they can be more intuitive, they can also slow you down. "You need both options," in his view, particularly when you've become familiar with a character-based application. In *1-2-3*, "once you know the commands, it's very quick. Using pulldown menus or a mouse would just take more time."

"I'm not convinced that [a graphical interface] is all that necessary," adds Tony Barcellos, a mathematics instructor at American River College in Sacramento, California, and executive vice president of the Sacramento PC Users Group. The benefits "have been oversold, particularly when you consider the performance penalty of working under a graphical environment," he maintains.

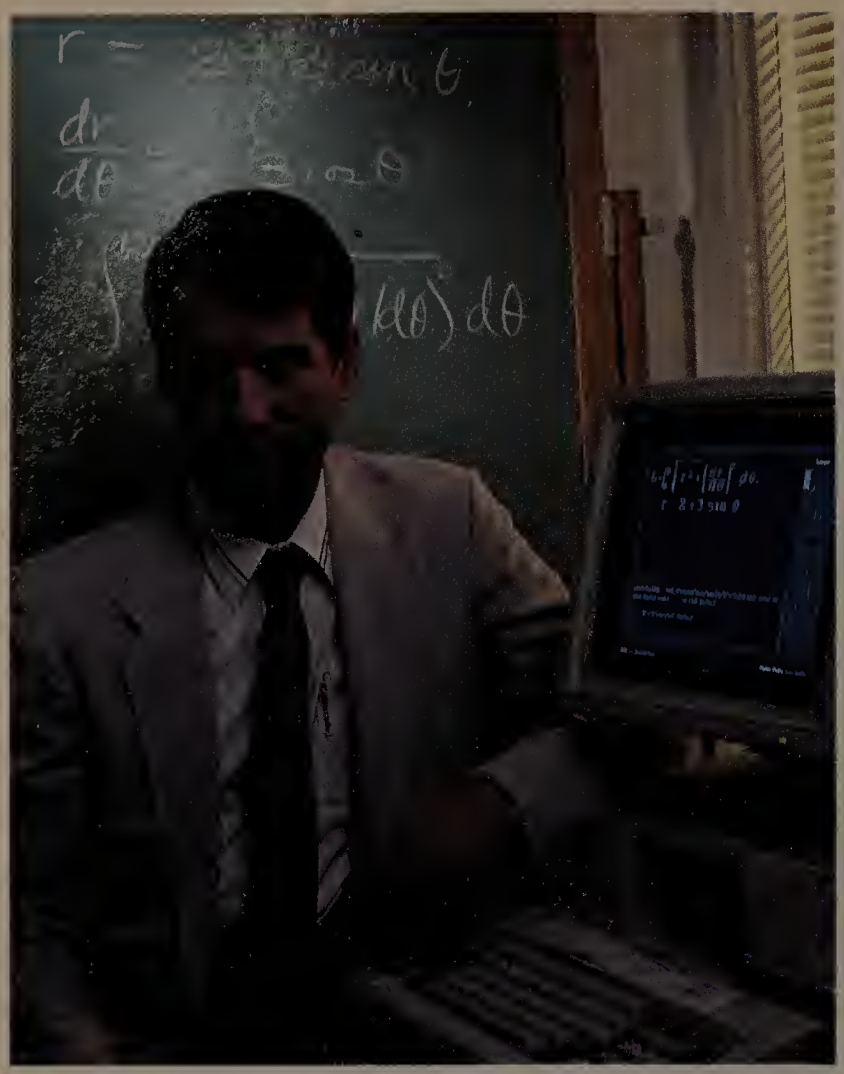
TEACHING APPLICATIONS TO SHARE

"What I need right now is a better ability to link text and graphic objects," Barcellos says. "I'd like to be able to put together a manuscript with text from one program and technical artwork from another and have equations built in. I can do that today, but it's clumsy."

His comments underscore a serious problem—the failure

"Technical support is fine for basic questions, but for anything complex it's not much help," says Shelly Talso of the Foundation for Teaching Economics in San Francisco.

ANNE HAMERSKY



"Standards should be well defined," says Tony Barcellos, mathematics instructor in Sacramento, California.

of software companies to ensure that users of different applications can share information easily. While many packages excel at meeting the needs of individual users, "what happens when you need to cooperate with someone else?" asks Barcellos. "The standards should be well defined, and the major corporations should pay attention to them. I don't think enough thought is given to the diversity of platforms out there."

For instance, the two major players in word processing, WordPerfect and Microsoft, often appear unaware of each other's large installed bases. Barcellos recommends that *Microsoft Word* include a feature that lets users save files in the most current *WordPerfect* format, and vice versa. Such an option would eliminate the need for reformatting when documents are swapped and save a lot of time (*Word for Windows* includes this feature).

Forsythe sees vendors making efforts to improve cooperation—a positive trend. "We're beginning to see a whole range of features unique to different programs, but now we can also link and share information between a data base, a word processor, a spreadsheet, and a graphics package. That's a benefit that's already affecting the way we work."

Corporate users will reap huge benefits when PC applications work smoothly with applications on other platforms. Environments such as *OfficeVision* that are designed to link PCs and larger systems are a step in the right direction, says Walgreens' Dolce, but they're still a long way from that goal.

WHO SAYS USERS CAN'T GET NO SATISFACTION?

PC WORLD READERS RATE THEIR SOFTWARE

Let's nat tell saftware develapers, but they must be daing samething right. A surprising 27 percent af respandents ta a recent *PC World* telephone survey say there is nothing they don't like about their most frequently used application.

Amang thase who repart problems, the mast frequent camplaint cancerns applicatians that are slaw ar difficult to learn and use or that demand tao much memary.

PC World surveyed 100 of its subscribers last February ta profile their saftware use and hear their apinians on saftware issues. We faund that word pracessors, spreadsheets, data base managers, and accounting packages are the four applications mast commonly used.

Readers say they like their major application most for ease of use (43 percent), the way it meets their current needs (16 percent), the combination af features (9 percent), and its speed and/ar versatility (8 percent).

Only 30 percent of respandents are using *Windows* applications, with exactly half af this group running mare than ane *Windaws* package. Ten percent say they wauld adapt *Windaws* if they needed an application that was nat also available under DOS. Others camment that impravements in *Windows'* memory handling and speed would prampt them to consider adapting the enviranment. A full 11 percent say *nathing* wauld prampt them ta make the switch.

Only 5 percent say they are currently running OS/2 Presentation Manager on their systems. Factors that wauld prompt respondents to consider maving ta PM include the availability af popular applications, lower implementation casts, and the purchase of a computer better able to run the operating system. —*R. F.*

MARC LONGWOOD

PAYING ATTENTION TO TODAY'S PROBLEMS

Gazing toward the future, developers lose touch with today's customer needs, users suggest. The result is a failure to provide the help needed to solve pressing business problems.

Talso, for example, says that when colleagues come to her with software questions, she's found that it's usually just as easy to field the inquiries herself as to call a technical support line. "Technical support is fine if you've got a basic question, but for anything complex it's not a lot of help," she remarks. "Besides, if they can answer your question, it usually means the answer's in the manual."

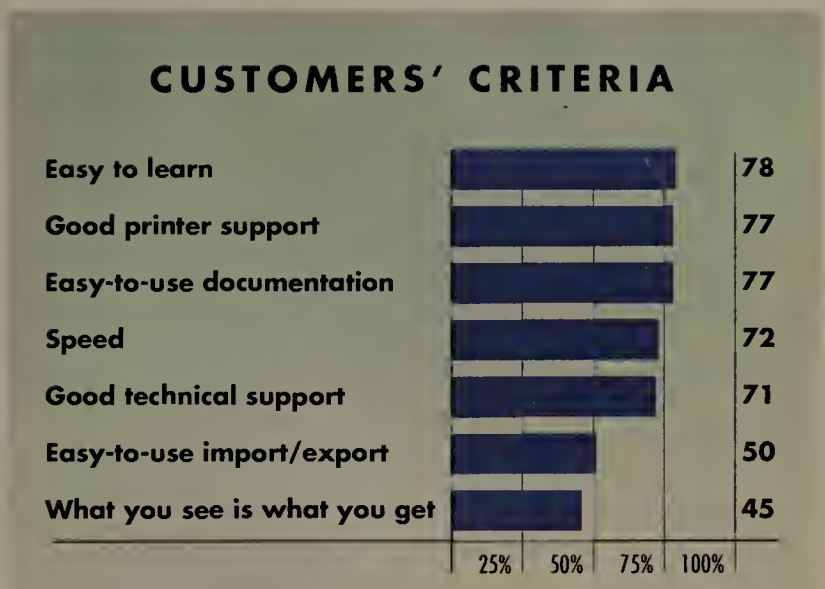
Dolce sees PC users as repeatedly forced to decide if added functionality is worth the additional hardware requirement. Software companies don't always add features in the most efficient way, she points out, noting that they seem to be writing for a 486 platform, while the vast majority of installed business systems are still 286-based PCs. "I'd like to see companies creating more software with functionality for the low-end machines that most people have," she says.

Many users wish that developers would listen more intently to what they are saying. But even on occasions when vendors are explicitly trying to reach out, as in beta testing programs, messages often don't get across.

Hilbers suggests software companies should take a second look at their beta testing cycle to ensure that they elicit the opinions of average users. "Maybe their beta test program isn't organized right, or maybe they don't have the time to implement all the necessary changes," he says. "But in either case, the process leaves something to be desired."

By the time users get to look at a new application, the vendors usually have the product pretty well defined, says Dolce. "They want to know how we like it, but they're not necessarily going to change much about it."

Roberta Furger is an associate editor for PC World.



Software developers rarely promote their packages based on printer support or solid documentation, but these issues were crucial to surveyed users. Only ease of learning rated higher.

Source: 1989 PC World Software Survey of 500 business PC users nationwide.

MICHAEL ABRAMSON

Companies should create software for the low-end machines people have, says Mary Dolce, systems analyst with Walgreens in Deerfield, Illinois.

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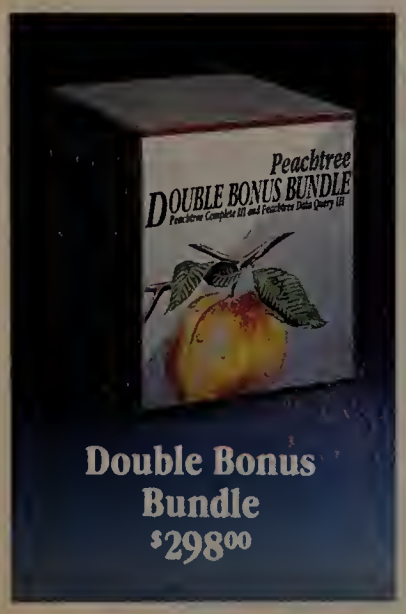

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Clear cobwebs from every corner of a hard drive, view text WordPerfect-ly, dash away dashes while reformatting plain ASCII text in Microsoft Word, get some directory DEL assistance, put the byte on a virus attack, and hang out at the electronic water cooler.

Edited by Tom Swan

Clearing the Cobwebs

Because many people in our department share one computer, the system's hard drive often suffers from a severe space shortage. Every program, it seems, spins its own backup files, but who has time to clear away cobwebs when there's work to do?

So, to erase old files automatically, I created CLEAN.BAT [see **LISTING 1**]. That and a *Turbo Pascal* program CLEANCD.PAS [see **LISTING 2**] issue DOS commands to delete files from every directory on the current drive.

CLEAN.BAT first creates a path list by piping TREE.EXE's output to FIND.DAT. It then runs CLEANCD, which reads FIND.DAT and COMMANDS [see **FIGURE 1** for an example of a COMMANDS file]. Finally, *(continues)*

```
echo off
type c:\clean\commands
echo will be run for every directory on the current drive.
pause
echo Creating directory list...
echo path: \ >c:\clean\find.dat
tree|find "Pa">>c:\clean\find.dat
c:\clean\cleancd
c:\clean\global.bat
```

LISTING 1: CLEAN.BAT creates FIND.DAT, a list of path names for CLEANCD.PAS (see LISTING 2).

```
program cleancd;
const
   pathname = 'c:\clean\';  { Must end with \ }
var
   ch : char;
   current_dir, directory, command : string[80];
   global_file, find_file, commands_file : text;
begin
   getdir( 0, current_dir );
   assign( global_file, pathname + 'global.bat' );
   rewrite( global_file );
   assign( find_file, pathname + 'find.dat' );
   reset( find_file );
   assign( commands_file, pathname + 'commands' );
   while not eof( find_file ) do begin
      repeat read( find_file, ch ) until ch = ':';
      readln( find_file, directory );
      writeln( global_file, 'cd' , directory );
      reset( commands_file );
      while not eof( commands_file ) do begin
         readln( commands_file, command );
         if length( command ) > 0
            then writeln( global_file, command )
      end { while }
   end; { while }
   writeln( global_file, 'cd ', current_dir );
   write( global_file, 'c:\clean\cleanup' );
   close( commands_file );
   close( find_file );
   close( global_file )
end.
```

LISTING 2: CLEANCD.PAS reads FIND.DAT to create GLOBAL.BAT, which CLEAN.BAT executes.

ANTHONY RUSSO

```
del *.bak
del *.baq
del *.$$$
```

FIGURE 1: A sample COMMANDS file for deletion of files across a hard disk.

CLEAN.BAT chains to the resulting batch file, GLOBAL.BAT, which runs the commands.

Phillip F. Smith
Youngstown, Ohio

Editor's note: Type CLEANCD.PAS into the Turbo Pascal 4.0, 5.0, *or* 5.5 *editor, then press* **<Alt>-CD<F9>** *to compile the program to disk. Quit* Turbo *and type* **MD C:\CLEAN** *to create a new directory on your hard drive. Another batch file, CLEANUP.BAT (see* **LISTING 3***), erases two temporary files created by the cleaning process. Copy CLEANCD.EXE, COMMANDS, and CLEANUP.BAT to the C:\CLEAN directory and CLEAN.BAT to a directory in your PATH command. TREE.COM and FIND.EXE must also be in the current PATH. Then, enter* **clean** *to sweep away your own cobwebs.*

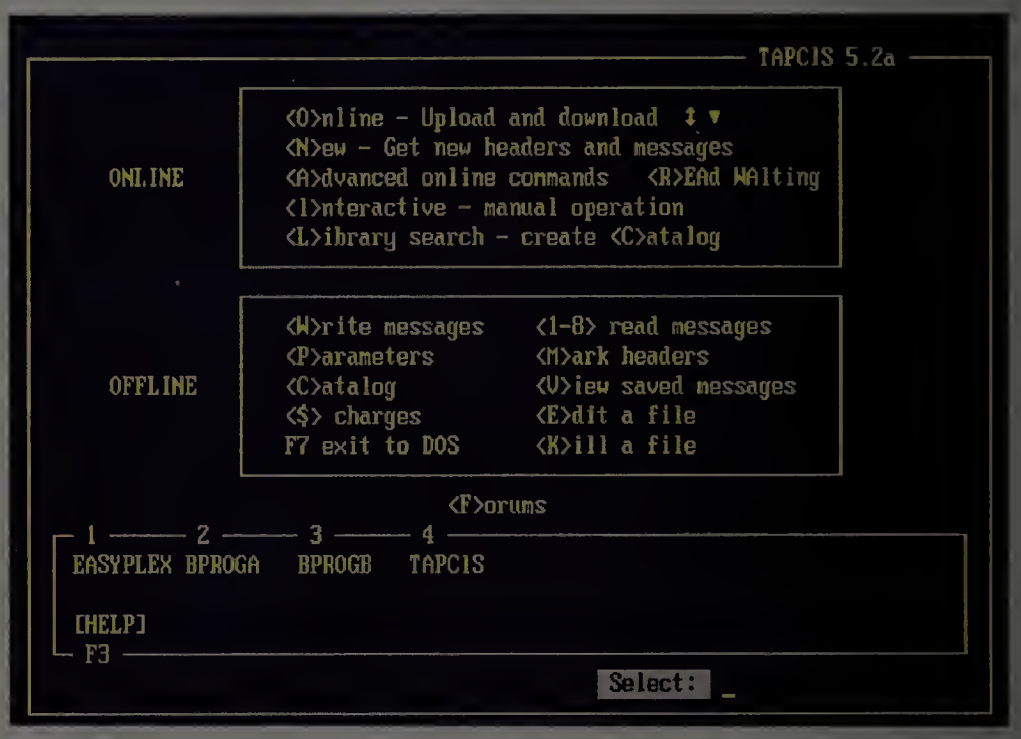
(continues)

```
echo off
del c:\clean\find.dat
del c:\clean\global.bat
```

LISTING 3: CLEANUP.BAT removes temporary files created by CLEAN.BAT (see LISTING 1) and CLEANCD.PAS (see LISTING 2).

DEVELOPER'S TOOLBOX

The Electronic Water Cooler



TAPCIS completely automates CompuServe's Easyplex and forum on-line sessions.

Like many developers, I work alone, so I rarely get the chance to meet my peers and chew the fat. Instead, I hang around the electronic equivalent of an office water cooler—a place to exchange techniques and learn about the latest trends. That place is CompuServe, the well-known on-line service that I joined back in the 1970's when it was known as Micronet.

People use CompuServe for many reasons—to receive stock market reports, to make travel plans, to shop on line, and so forth. But I use it mostly for its programmers' forums—bulletin boards where anyone can post messages, ask questions, and trade tips. CompuServe's forums put me in touch with the world's top software artists. And they provide libraries of programs that I can download to my PC—a great way to collect low-cost developer's tools.

The trouble is, I've never mastered CompuServe's cryptic commands. To the service's credit, it's far easier to use than it used to be, with a new menu-driven interface available free to new users and for $10 to others. But even after years of on-line experience, I still had to hunt through the manual to find the exact commands I needed while my communications charges continued to mount.

Then I found *TAPCIS*—an amazing shareware program from Support Group, Incorporated, that has changed my on-line life. *TAPCIS* completely automates my CompuServe sessions. It can join forums, retrieve messages, manage Easyplex mail, catalog forum libraries, and download files. Nearly every evening, I relax while *TAPCIS* dials CompuServe, sends my ID and password, reads my Easyplex mail, and retrieves messages from all the forums I track. *TAPCIS* is so reliable that it's become my personal CompuServe guru—I'd be lost on line without it.

Best of all, *TAPCIS* lets me browse messages and compose replies off line, minimizing my connection fees. It then posts my answers back to the forums. *TAPCIS* can store every message in plain-text files for future reference, but to conserve disk space, I save only those messages that interest me.

Even so, after a few months my cup

(continues)

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Oh, What a Perfect View

To make *WordPerfect 5.*x's View Document command more accessible, I created a simple but useful macro. To add it to your system, start *WordPerfect* and type the macro's keystrokes [see **FIGURE 2**]. Press <Enter> only where shown.

<Ctrl>-<F10>	Turn on recorder
<Alt>-V	Name the macro
Viewdoc<Enter>	Describe it
<Shift>-<F7>	Select Print and
6	View Document
<Ctrl>-<Page Up>	Start pause
P<Enter>	Finish pause
<F7>	Exit to document
<Ctrl>-<F10>	Turn off recorder

FIGURE 2: Enter this WordPerfect macro, and press <Alt>-V to preview a document before printing.

Then, load a document and press **<Alt>-V** to preview the text before printing. Press **<Enter>** to return to the text display.

Bob Mosley
Arthur, Ontario, Canada

Editor's note: The macro works best with CGA, EGA, VGA, or Hercules graphics adapters. On text-only monochrome displays, you'll see only a rough approximation of a document's layout.

Dashing the Dashes

I frequently import ASCII text into *Microsoft Word,* a job made easier by reader Richard F. Laherty's macro for converting text to *Word*-formatted paragraphs ["ASCII Imports for Word," *Star-Dot-Star,* December 1989]. When I reformat hyphenated text, however, the result is littered with the likes of "set- tled" and "ac- tion."

To fix the problem, I expanded the macro [see **FIGURE 3**] to close up all such words by deleting unwanted dashes and spaces. As in Mr. Laherty's original, the macro requires two carriage returns after each paragraph and inserts a pipe (¦) to mark the document's end. If the original text has any pipes, replace them before converting.

Russell Schoof
Molalla, Oregon

Editor's note: Type the macro into Word *exactly as shown. Press* **<Ctrl>-[** *and* **<Ctrl>-]** *to enter the chevrons « and ». Highlight all lines and choose* Copy *(*<Esc>C*). Enter the macro name* **a2word.mac** *followed by an optional caret (^) and <Ctrl>-key combination.* *(continues)*

DEVELOPER'S TOOLBOX

(continued)

was overflowing with archived message files. *TAPCIS* was helping me get the information I needed, but I was still overwhelmed by the task of organizing and searching the data I had collected and stored on floppies.

Then I solved the problem with another shareware program that I found, just by luck, in CompuServe's *TAPCIS* forum—*Recon,* by Orest Skrypuch. Now, I simply feed my saved messages to *Recon,* which deletes duplicate messages while sorting them by thread (topic). I can then use the program's interactive browser to search, delete, and copy text from my archives. With its clever message-handling features, *Recon* is *TAPCIS*'s perfect partner.

So, if you thirst for company, let *TAPCIS* and *Recon* guide you through a few CompuServe forums. You'll be surprised at how much you can learn just by hanging around the water cooler.

Let's talk it over. My MCI Mail handle is TSWAN; my CompuServe ID is 73627,3241. —*Tom Swan*

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5000 Arlington Centre Blvd.
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Orest Skrypuch
217 Terrace Hill St.
Brantford, Ontario
N3R 1G8 Canada
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OTHER SUPPORT: none
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TAPCIS 5.2a
Support Group, Inc.
Lake Technology Park
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Press **<Enter>** *and then type* **<Esc>TGS <Enter>** *to save the glossary.*

After that, to convert a plain-text ASCII file, load it into Word, *and either type* **a2word.mac** *and press* **<F3>**, *or press the macro's* <Ctrl>-key.

```
<ctrl pgdn>¦<ctrl pgup>
«while selection<>"¦"»
<esc>s^^p<enter><right>
«if selection<>"^p"»
<backspace><space>
«else»<right>
«endif»
«endwhile»
<ctrl pgup>
«while selection<>"¦"»
<esc>s-<space><enter>
«if selection="- "»
<del>
«else»
<ctrl pgdn><left>
«endif»
«endwhile»
<del><ctrl pgup>
```

FIGURE 3: This ASCII-to-Microsoft Word macro formats plain text paragraphs and erases unwanted hyphens and spaces.

Directory DEL Assistance

In "Liquidating a Directory" [*Star-Dot-Star*, February 1990], Lucas Skoczkowski described a "quick trick" to remove a directory and delete its files with only two commands. (The second step is wrong, however—it should be type **RD** and a space, press **<F3>**, and then press **<Enter>**.) To reduce those steps even further, I placed them in a batch file DELDIR.BAT [see **LISTING 4.**]

To use the program, type **DELDIR** and a directory name. Then, answer the on-screen prompts to send that directory and its files to never-never land.

John K. Currier, Jr.
Beckley, West Virginia

Editor's note: To avoid deleting files from the current, previous, and root directories, I added commands to reject ., .., and \ arguments. I also added (continues)

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```
echo off
echo.
if "%1" == ""    goto missing
if "%1" == "."   goto badarg
if "%1" == ".." goto badarg
if "%1" == "\"   goto badarg
if exist %1      goto notdir
if exist %1\nul goto isdir
goto notfound
:isdir
dir %1 /p
echo.
echo Press Enter Y Enter to
echo erase and remove %1. Or,
echo press Ctrl-CY to cancel.
pause
if exist %1\*.* del %1
rd %1
goto end
:missing
echo Error: Missing argument
goto instruct
:badarg
echo Error: Bad argument
goto instruct
:notdir
echo Error: %1 not directory
goto instruct
:notfound
echo Error: Can't find %1
:instruct
echo Usage: DELDIR directory
:end
echo.
```

LISTING 4: DELDIR.BAT removes a specified directory and erases its files.

programming to test whether a directory exists. Even so, a minor quirk remains. If the current directory is C:\TEMP, the command DELDIR C:\TEMP will erase TEMP's files, but it won't remove the directory. To do that, type **CD ..<Enter>DELDIR TEMP.** *If you receive an 'Invalid path...' message, delete subdirectories inside the directory you want to remove. Then try again.*

Putting the Byte on a Virus

I found Annette B. Gates's method in "Antiviral Vaccine" [*Star-Dot-Star*, October 1989] useful for verifying COMMAND.COM's length as a test for a possible computer virus. But for extra security I modified the original idea—now COMMAND.COM is scanned byte for byte.

The new batch file commands [see **LISTING 5**] compare COMMAND.COM with a copy of itself and can therefore catch a virus that's clever enough not to change COMMAND.COM's length. Booting takes a little longer—about 3 seconds more on my 12-MHz AT clone—but that's a small price to pay for extra protection from a wicked virus.

Bob Billingsley
Mercer Island, Washington

Editor's note: To put this technique into action, make a copy of COMMAND.COM called COMMAND.XXX in your boot drive's root directory. Add the batch file commands to AUTOEXEC.BAT after its PATH command, (continues)

```
echo off
echo Comparing COMMAND.COM and COMMAND.XXX
fc command.com *.xxx|find "no" >chkcomd1.$$$
copy chkcomd1.$$$ chkcomd2.$$$ >nul
del chkcomd1.$$$
if exist chkcomd2.$$$ goto okay
echo !! Comparison failed -- Possible Virus !!
goto end
:okay
del chkcomd2.$$$
:continue
rem Batch file continues here...
:end
```

LISTING 5: Add these commands to AUTOEXEC.BAT to compare COMMAND.COM with a copy of itself called COMMAND.XXX.

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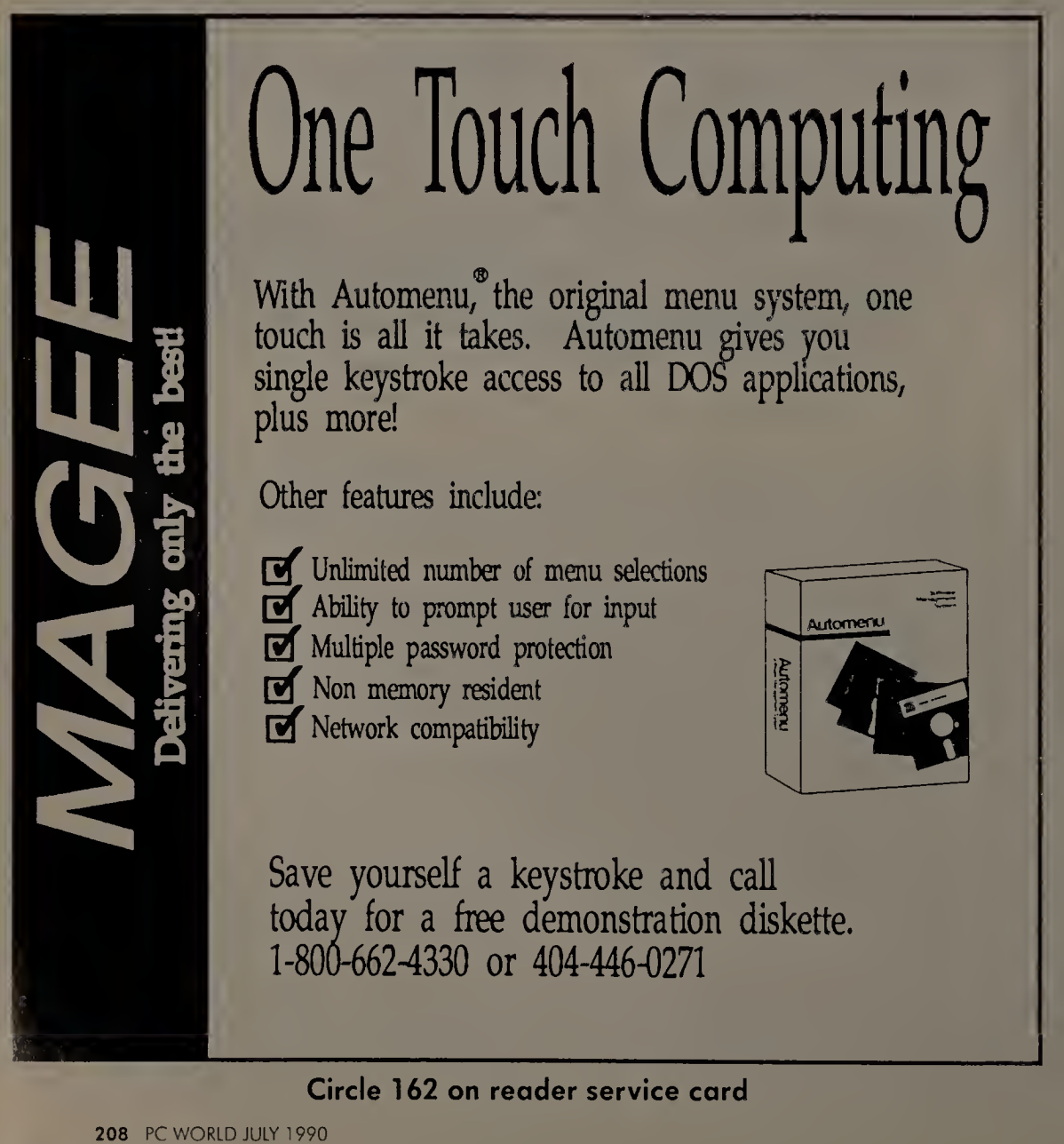
which must list the directory where FC.EXE is stored. If your DOS version has COMP.EXE instead of FC.EXE, change the third command to **echo N ¦ comp command.com command.xxx ¦ find "ok" >chkcomd1.$$$**, *and insert another line,* **echo**, *after the fifth line.*

From then on, every time you boot, the bytes in COMMAND.COM will be compared to those in COMMAND.XXX. If the comparison fails, the batch file will display a message and halt. In that event, copy a fresh COMMAND.COM from your DOS master disk onto your hard disk.

Tom Swan is a PC World *contributing editor and the author of* Mastering Turbo Assembler *(Howard W. Sams and Co., Indianapolis, 1989).*

Share your tips and discoveries with PC World *readers; see How to Contact PC World, page 4.*



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POWER TIP NO. 112

WordPerfect Thesaurus Navigation

WordPerfect's thesaurus may often give you more synonyms than will fit in the three columns provided. What's more, you can actively select from only one of those columns—the one with the boldface letters to the right of the words.

To navigate through the thesaurus listings, use the <Cursor Left> and <Cursor Right> keys to go from one column to another. If the contents of a column don't fit on screen, the <Page Up>, <Page Down>, <Gray Plus>, and <Gray Minus> keys will scroll you through it.

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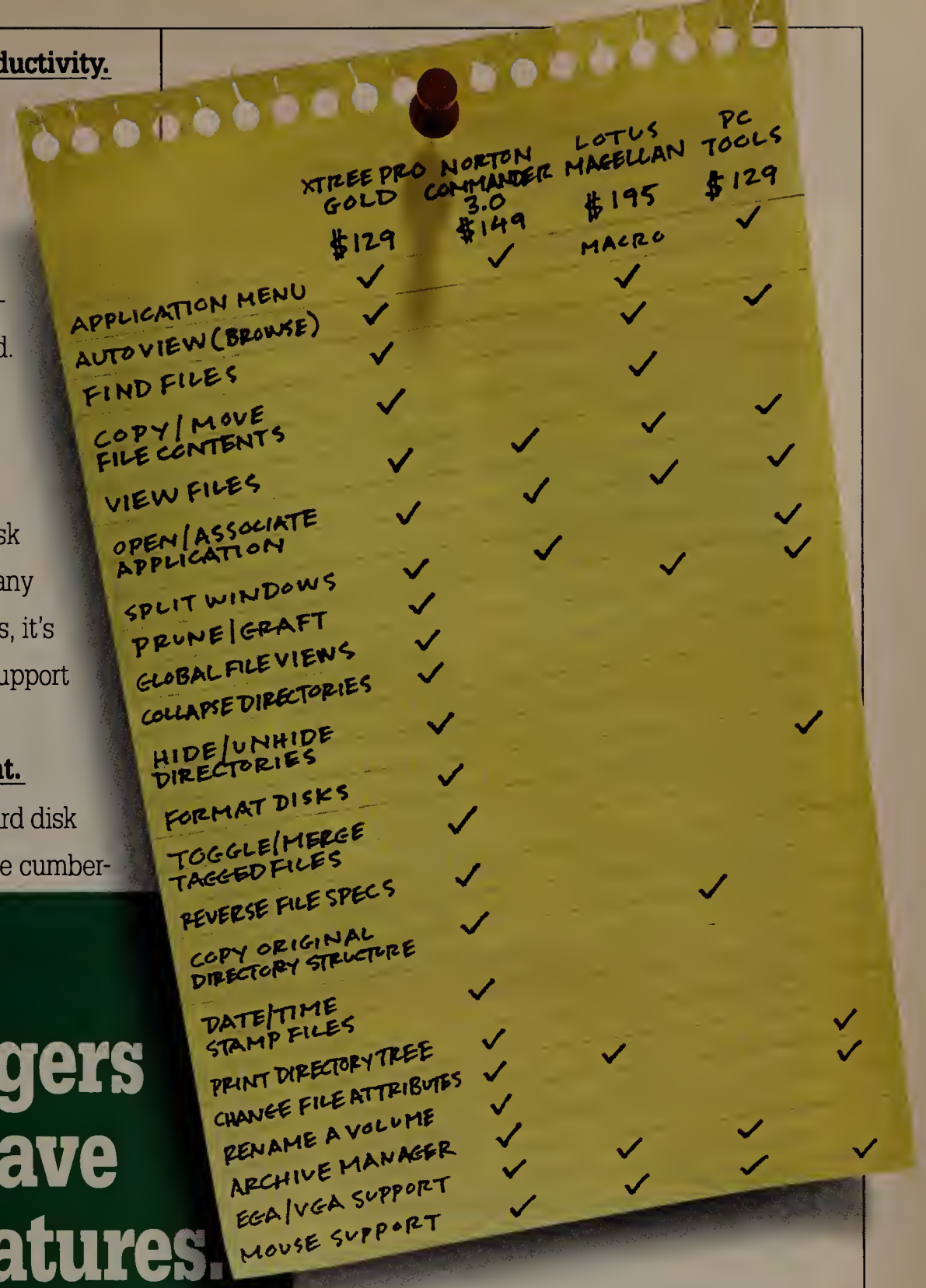

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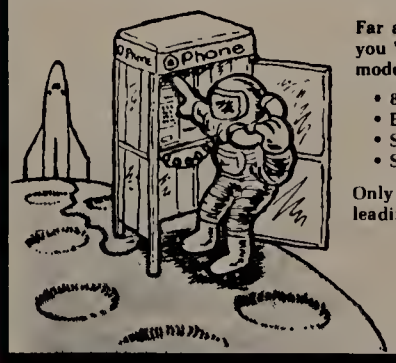

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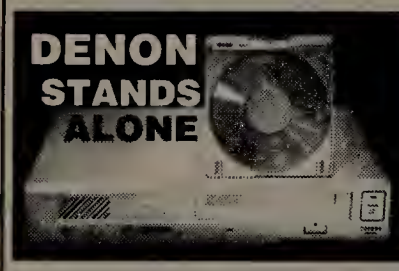

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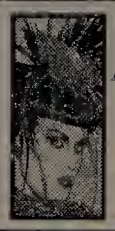

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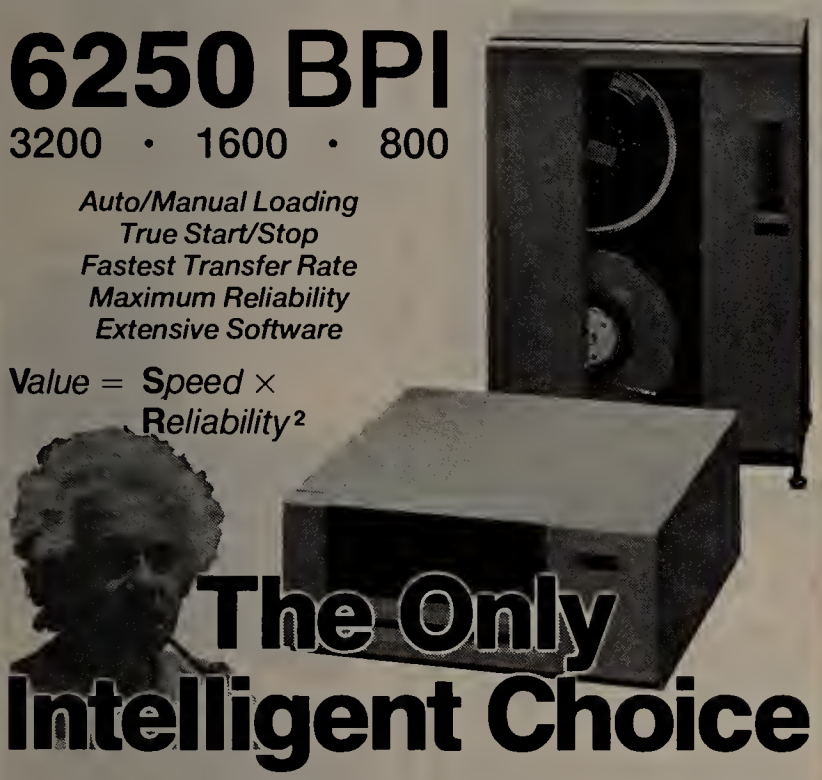

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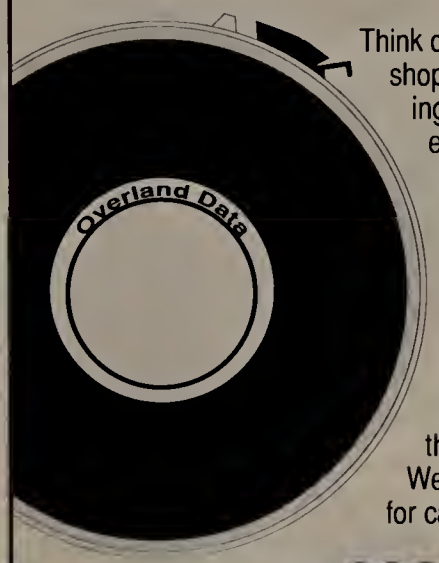

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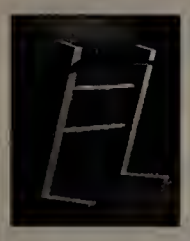

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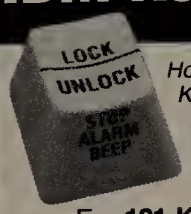

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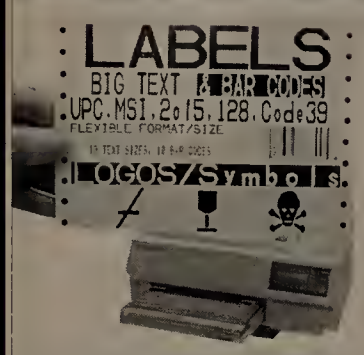

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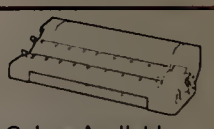

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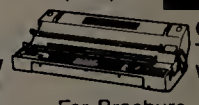

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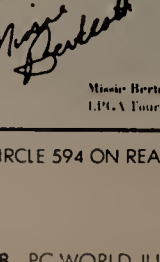

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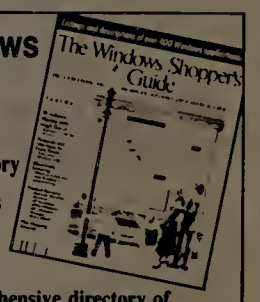

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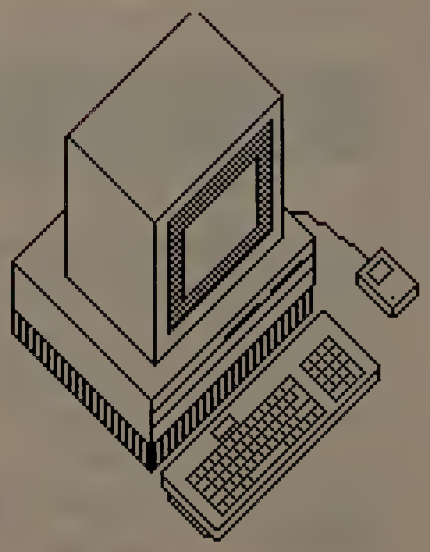

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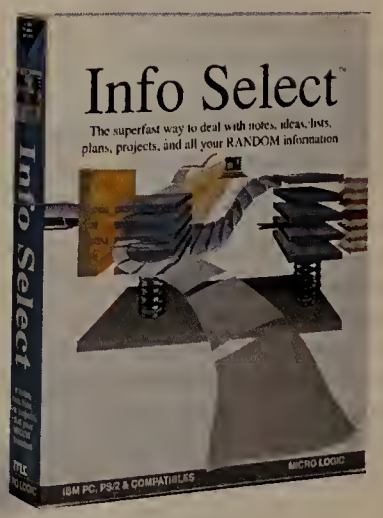

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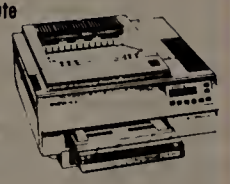

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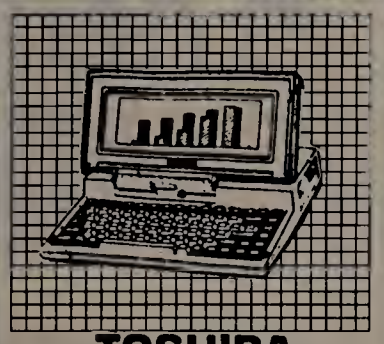

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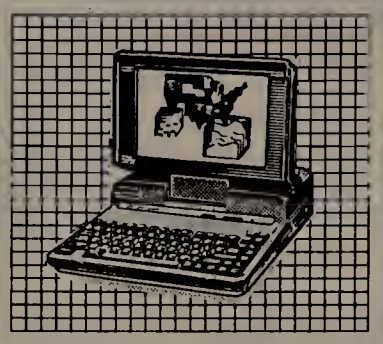

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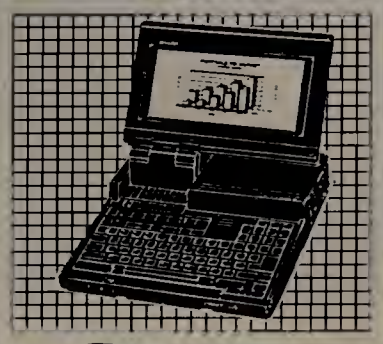

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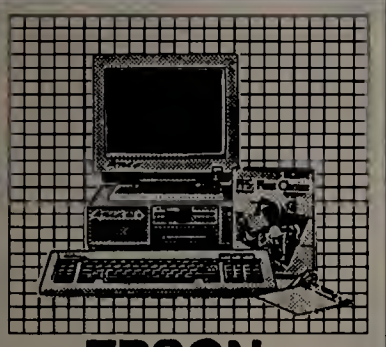

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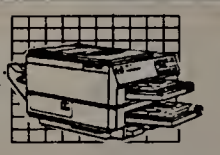

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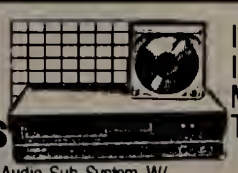

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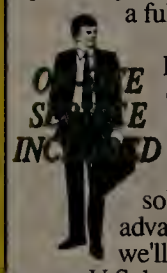

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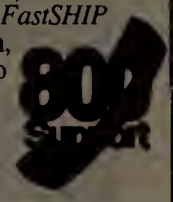

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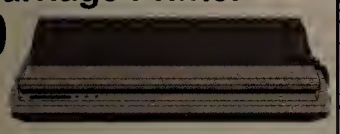

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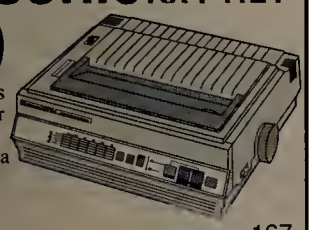

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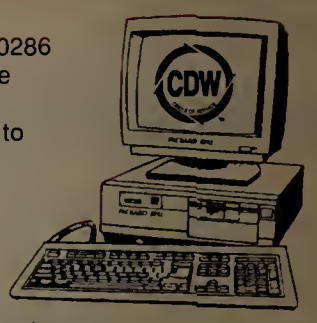

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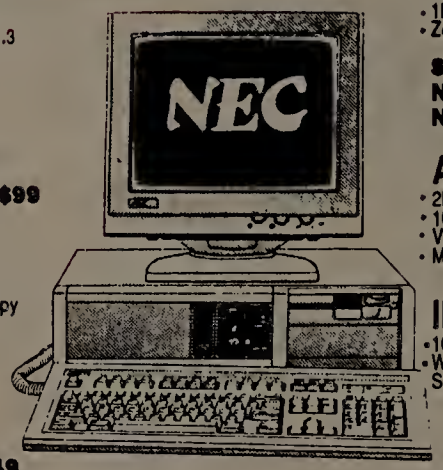

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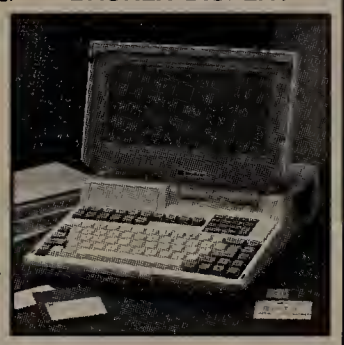

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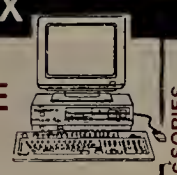

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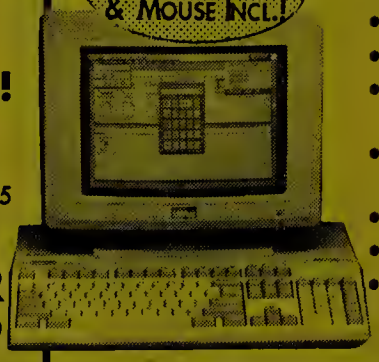

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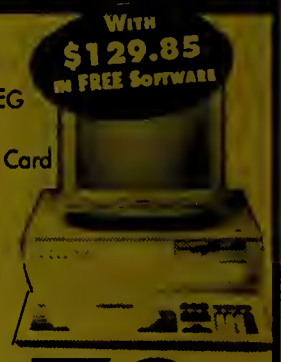

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TAKING IT HOME

The practical guide to home/office computing

On the road with my home office

Lawrence J. Magid

For me, "working at home" sometimes means leaving home. There are times when I just need to get away, so I pack up my laptop and head for La Crème de Café coffee shop. On a nice day, I may ride my bike and set up shop at the park.

I can choose from a 12.6-pound 286 Toshiba T1600/40 or a 6.4-pound Toshiba T1000. The former is an office on wheels. The latter lacks a hard disk and chugs along at the speed of the original IBM PC, and its unlit LCD display is hard to read.

Despite its limitations, I almost always opt for the smaller, lighter T1000. To be sure, I'd rather have a Compaq LTE or Toshiba's new hard disk–equipped T1000XE. But with a list price of $999 and a street price under $700, the T1000 is a very good buy for those of us who have a limited budget and don't need a heavy-duty machine.

Portable computing wasn't always a bike ride in the park for me. It took a little extra hardware and the right software to make my T1000 solution work. The hardware is Toshiba's internal 768K RAM disk card. That's not a lot of storage, but it keeps my on-the-road software available at all times. DOS 2.11 is etched into ROM, and with the RAM disk, I need only my single floppy to back up data.

A bigger problem is the T1000's unlit screen; it's really difficult to see the cursor, especially with programs that display it as a small flashing underline. I solved that with a shareware utility that I downloaded from Toshiba's on-line bulletin board (714/837-4408). *BLOCKCUR.COM* changes the cursor into a flashing block that is easily visible even on a low-contrast screen under poor lighting conditions.

Next came the issue of how to fit a desktop's worth of software into my laptop. My desktop's *WordPerfect* is far too big for the portable's RAM disk or floppy. Besides, I need room for a communications program as well. I experimented with a number of combinations and finally settled on a program that's been around for a couple of years.

SideKick Plus—the memory-resident integrated program from Borland International—is the only application installed on my laptop. It comes with file manager, notepad, outliner, phone book, time planner, calculator, and ASCII character-code table, but each module takes up both memory and disk space.

The notepad isn't a full-fledged word processor, but it has all the features I need, including word wrap, block moves, and the ability to import ASCII files. It uses the same commands as *WordStar* and saves files as standard ASCII text for import into virtually any word processing program. A *WordPerfect* macro easily handles minor formatting problems when importing files. Best of all, the notepad allows you to edit up to nine documents at a time—that's seven more than *WordPerfect*—and to cut and paste between documents.

The communications module has a dialing directory, automatic log-on scripts, and the ability to upload and download files. And it has one great feature not available even on most high-end communication programs—Edit Dialog.

This allows you to use the word processing commands on data from a communications session. You can search for any string, or page up and down through the session to find (and save) any material that may have already scrolled across the screen. You can go back and save data to a file even if you neglected to save it to disk while it was scrolling. You can also transfer data from *SideKick*'s word processor directly into a communications session.

Because *SideKick Plus* is memory resident, there's still room for running other software. I keep *1-2-3* release 2.2 on a floppy disk so that if I need a spreadsheet, it's there.

My 6.4-pound traveling companion doesn't have all the comforts of my desktop, nor does La Crème de Café have all the comforts of home. And to tell the truth, that's the way I like it. Sometimes I need to get away from the phones, the kids—and the captivating games on my desktop PC.

Lawrence J. Magid is a nationally syndicated columnist.

T1000 $999, **768Card** (768K RAM disk for T1000) $399, **T1000XE** $2699; Toshiba America Information Systems; 800/334-3445, 714/583-3000.

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ANTHONY RUSSO

PC WORLD

Instant Reference Card #2

For use with PC World Instant Reference Card Portfolio

BASICS: WORDPERFECT 5.0 AND 5.1

Deleting, copying, and moving text

Deleting text in *WordPerfect* is a straightforward process—place the cursor in the desired spot, then issue the appropriate keystrokes as shown below. To copy or move text, you can delete the text and then undelete it, or you can use *WordPerfect's* Move command. As a rule, use delete/undelete for small blocks of text, ond the Move commond for sentences, paragraphs, pages, and other lorge blocks.

The table below shows the easiest method for each situation.

Tip: Since *WordPerfect* saves the last three deletions in its buffer, you can scoop up several blocks of text at once and insert them into your document.

Note: When you come to a "move cursor" step, relocate the cursor to the desired destination, then insert the copied or moved text at that spot.

	DELETE	COPY	MOVE
By Word			
Full word	<Ctrl>-<Backspace>	<Ctrl>-<Backspace> <F1>1 move cursor <F1>1	<Ctrl>-<Backspace> move cursor <F1>1
From cursor to end of word	<Home><Delete>	<Home><Delete> <F1>1 move cursor <F1>1	<Home><Delete> move cursor <F1>1
From cursor to beginning of word	<Home><Backspace>	<Home><Backspace> <F1>1 move cursor <F1>1	<Home><Backspace> move cursor <F1>1
By Line			
Full line	<Home><Cursor Left> <Ctrl>-<End>	<Home><Cursor Left> <Ctrl>-<End> <F1>1 move cursor <F1>1	<Home><Cursor Left> <Ctrl>-<End> move cursor <F1>1
From cursor to end of line	<Ctrl>-<End>	<Ctrl>-<End> <F1>1 move cursor <F1>1	<Ctrl>-<End> move cursor <F1>1
From cursor to beginning of line	<Alt>-<F4> <Home><Cursor Left> <Delete>y	<Alt>-<F4> <Home><Cursor Left> <Ctrl>-<F4>bc move cursor <Enter>	<Alt>-<F4> <Home><Cursor Left> <Ctrl>-<F4>bm move cursor <Enter>
By Sentence	<Ctrl>-<F4>sd	<Ctrl>-<F4>sc move cursor <Enter>	<Ctrl>-<F4>sm move cursor <Enter>
By Paragraph	<Ctrl>-<F4>pd	<Ctrl>-<F4>pc move cursor <Enter>	<Ctrl>-<F4>pm move cursor <Enter>
By Page			
Full page	<Ctrl>-<F4>ad	<Ctrl>-<F4>ac move cursor <Enter>	<Ctrl>-<F4>am move cursor <Enter>
From cursor to end of page	<Ctrl>-<Page Down>y	<Ctrl>-<Page Down>y <F1>1 move cursor <F1>1	<Ctrl>-<Page Down>y move cursor <F1>1
From cursor to beginning of page	<Alt>-<F4> <Ctrl>-<Home> <Cursor Up> <Delete>y	<Alt>-<F4> <Ctrl>-<Home> <Cursor Up> <Ctrl>-<F4>bc move cursor <Enter>	<Alt>-<F4> <Ctrl>-<Home> <Cursor Up> <Ctrl>-<F4>bm move cursor <Enter>
By Block	<Alt>-<F4> move cursor to end of block <Delete>y	<Alt>-<F4> move cursor to end of block <Ctrl>-<F4>bc move cursor <Enter>	<Alt>-<F4> move cursor to end of block <Ctrl>-<F4>bm move cursor <Enter>

Fold Here

Fold Here

PC WORLD

Instant Reference Card #2

For use with PC World Instant Reference Card Portfolio

ADVANCED: WORDPERFECT 5.0 AND 5.1

Formatting text

When you select a text attribute, such as boldface or underline, *WordPerfect* inserts codes that turn the attribute on and off. If Block (<Alt>-<F4>) is on, the codes are automatically placed at the beginning and the end of the highlighted text. Otherwise, the codes are placed immediately before and after the cursor, so you can start typing in that format right away. How the attribute is displayed depends on your video setup.

However, when you select a base font, such as 14-point Helvetica, only one code is inserted, for turning the font on. Unless you select a different font elsewhere in the text, the base font will be in effect to the end of the document.

Tip: If you change complex formats frequently, check out "Styles" in *WordPerfect*'s documentation.

Note: To delete any attribute or font, press <Alt>-<F3> (Reveal Codes), place the cursor on the code, and delete it. With attributes, deleting either the beginning or the end code erases the other.

	For New Text	Existing Text	Entire Document
BASE FONT	<Ctrl>-<F8>f <Enter> <Cursor Left> <Ctrl>-<F8>f select font <Enter> enter text <Cursor Right>	cursor to end of text to be changed <Ctrl>-<F8>f <Enter> cursor to beginning of text to be changed <Ctrl>-<F8>f select font <Enter>	<Shift>-<F8>df select font <Enter> <F7>
BOLDFACE	<F6> enter text <F6> *or* <Cursor Right>	move to one end <Alt>-<F4> move to other end <F6>	<Home><Home> <Cursor Up> <Alt>-<F4> <Home><Home> <Cursor Down> <F6>
ITALICS	<Ctrl>-<F8>ai enter text <Cursor Right>	move to one end <Alt>-<F4> move to other end <Ctrl>-<F8>ai	<Home><Home> <Cursor Up> <Alt>-<F4> <Home><Home> <Cursor Down> <Ctrl>-<F8>ai
UNDERLINE	<F8> enter text <F8> *or* <Cursor Right>	move to one end <Alt>-<F4> move to other end <F8>	<Home><Home> <Cursor Up> <Alt>-<F4> <Home><Home> <Cursor Down> <F8>
DOUBLE UNDERLINE	<Ctrl>-<F8>ad enter text <Cursor Right>	move to one end <Alt>-<F4> move to other end <Ctrl>-<F8>ad	<Home><Home> <Cursor Up> <Alt>-<F4> <Home><Home> <Cursor Down> <Ctrl>-<F8>ad
STRIKEOUT	<Ctrl>-<F8>as enter text <Cursor Right>	move to one end <Alt>-<F4> move to other end <Ctrl>-<F8>as	<Home><Home> <Cursor Up> <Alt>-<F4> <Home><Home> <Cursor Down> <Ctrl>-<F8>as
SUPERSCRIPT	<Ctrl>-<F8>sp enter text <Cursor Right>	move to one end <Alt>-<F4> move to other end <Ctrl>-<F8>sp	<Home><Home> <Cursor Up> <Alt>-<F4> <Home><Home> <Cursor Down> <Ctrl>-<F8>sp
SUBSCRIPT	<Ctrl>-<F8>sb enter text <Cursor Right>	move to one end <Alt>-<F4> move to other end <Ctrl>-<F8>sb	<Home><Home> <Cursor Up> <Alt>-<F4> <Home><Home> <Cursor Down> <Ctrl>-<F8>sb

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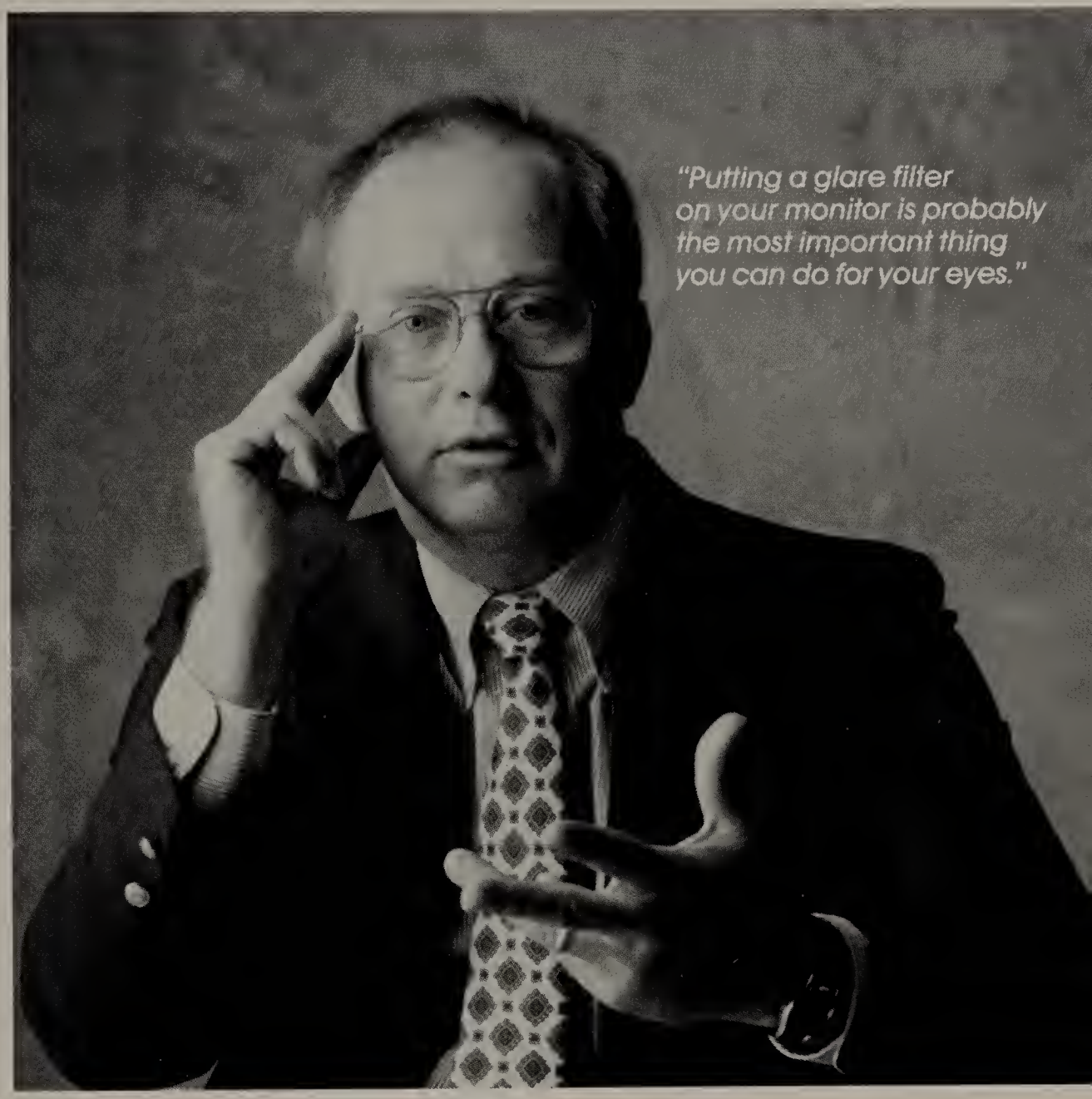
For use with PC World Instant Reference Card Portfolio

"Since I began using a computer five years ago, my eyeglass prescription has increased three times."



Tom Judd, president and founder of Curtis Manufacturing, on why you should use a glare filter.

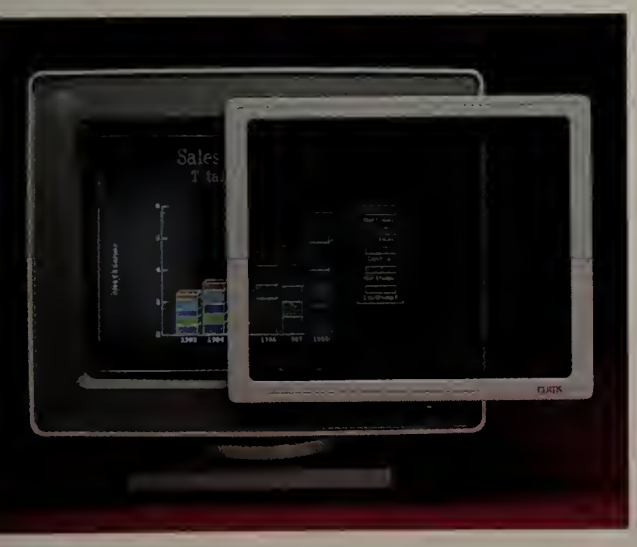
"Headaches, blurry vision, scratchy and burning eyes, overall visual fatigue ... These are the most common manifestations of monitor glare.
The solution? Get a glare filter.
The Curtis Anti Glare Glass Filter has been specifically designed to reduce monitor glare and improve on-screen contrast. Using one reduces headaches, visual fatigue, and even neck and back strain.
When I asked our design team to develop the highest quality, best value glare filter on the market, I learned that certain filter elements worked better than others."

Glass vs. plastic:

"When I tested the plastic models, they scratched so easily after one cleaning, I could see for myself that glass was significantly better."

Glass vs. mesh:

"I have a high resolution color monitor. When I put a mesh filter on it, the monitor was harder to read, not easier. The mesh made the characters appear fuzzy."



Two-sided optical coating vs. one:

"I learned that monitor glare would hit both sides of the filter. A glass filter with optical coating on both sides visibly reduces glare better."

Cleaning the filter:

"All glare filters need to be cleaned occasionally. I asked, 'How?' Our design team answered by including a bottle of specially formulated, non-streaking cleaner and a lint-free cloth in every package. No other manufacturer does this."

Reversible frame:

"I asked for a durable, cosmetically attractive and ergonomically designed frame. Our designers delivered with a unique high-impact injection molded plastic frame which is black on one side—for those who want the utmost ergonomic design—and gray on the other side—for those who want to match the aesthetics of their monitor."

The results:

"The technical specifications of our filters are impressive: glare reduced by 95%, contrast improved 20 times. The design team told me how successful our product was, but I didn't realize it until I put one on my computer. What a difference! In fact, the Curtis Anti-Glare Glass Filter worked so well, I had one added to every computer at our corporate headquarters."

If you'd like to know more about the Curtis Anti-Glare Glass Filter and other Curtis products that make life in front of a computer easier and less stressful, write or call for our free brochure: *Tips to Computing More Comfortably,* Curtis Manufacturing Company, Inc., 30 Fitzgerald Drive, Jaffrey, NH 03452. (603) 532-4123 ext. 99

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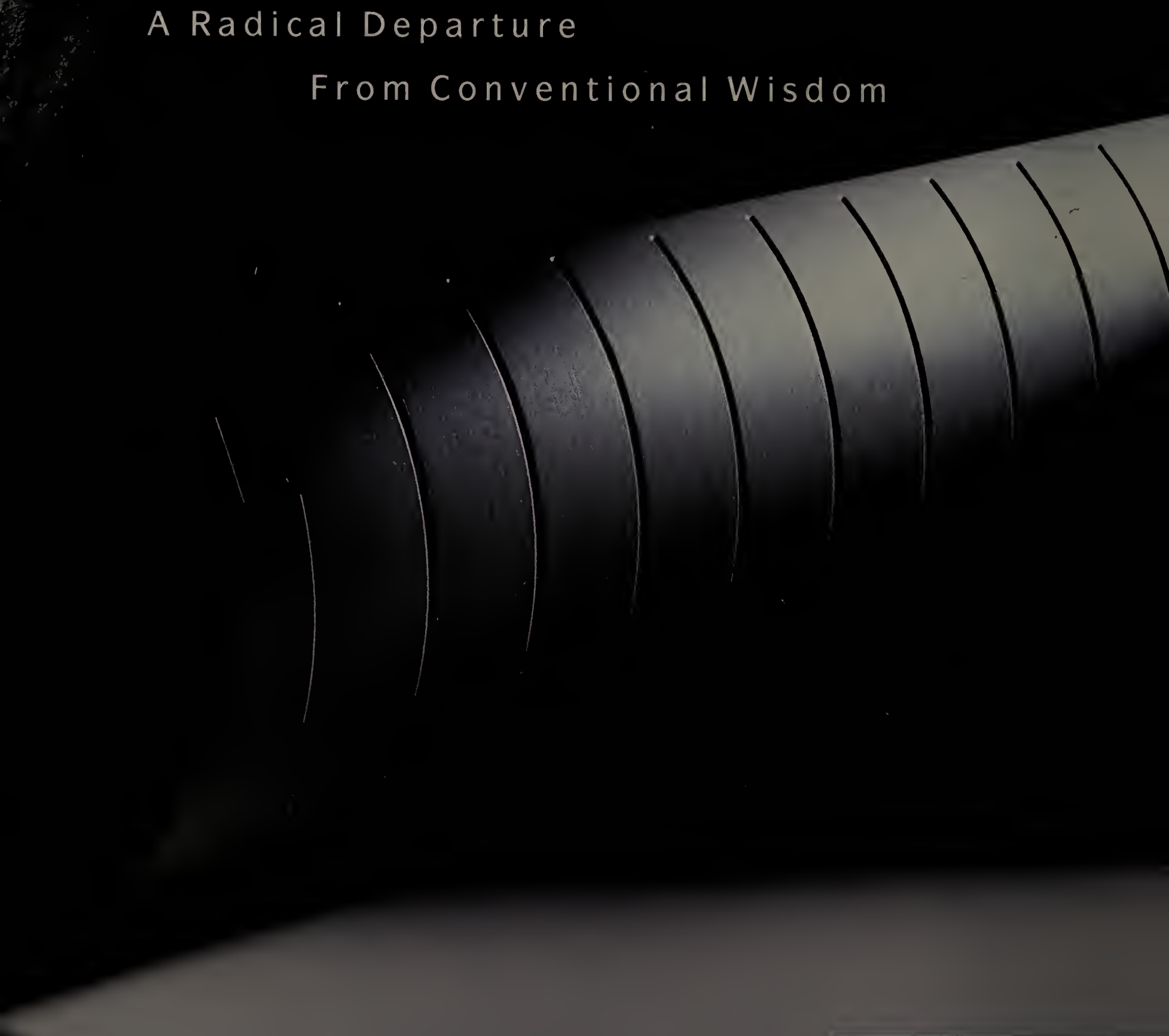
A Radical Departure

From Conventional Wisdom



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